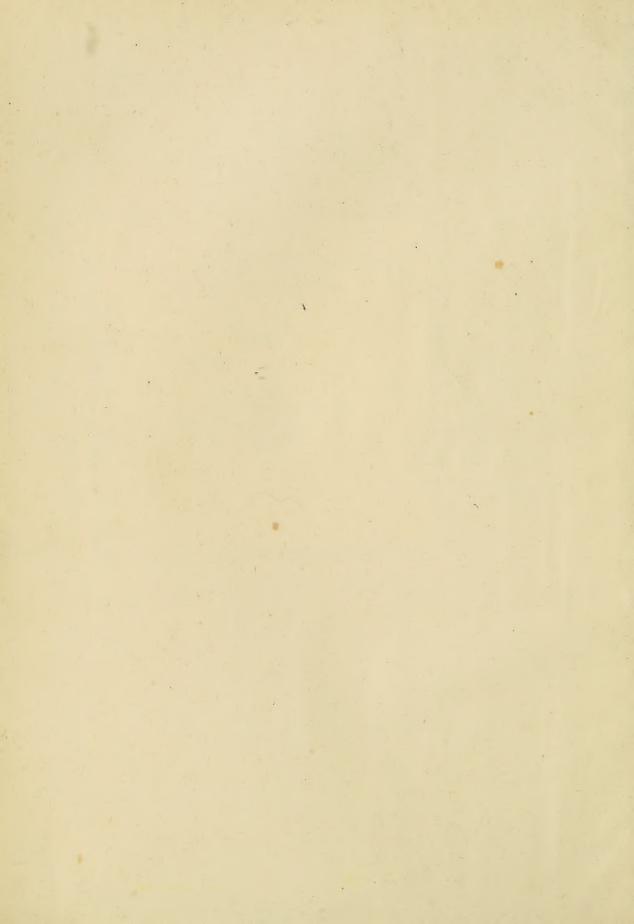
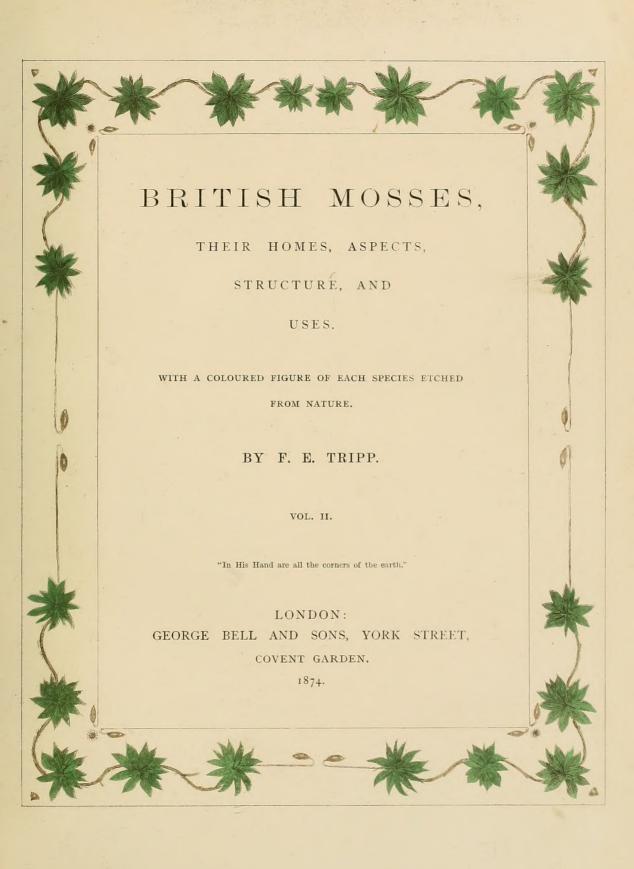


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PLATE XVII. (continued) AND XVIII.

ORTHOTRICHEÆ.

Fig. 5. Characteristics of Order.

Capsule (a) immersed, or on a short seta, very long, cylindrical or pear-shaped, swelling at the base (apophysis), long, with eight or sixteen coloured ribs (striæ), which alternate with the teeth, and make the capsule appear deeply furrowed; calyptra (b) large, and beset with upright bristles (whence the name Bristle Moss); peristome (c) single or double, below the mouth of capsule, its thirty-two divisions apparently forming eight or sixteen teeth; inner peristome, when present, consisting of eight or sixteen cilia. Small plants, stems much branched, growing in round cushions on trees and rocks; the leaves remarkably crisped when dry.

I. Capsule immersed, calyptra with sixteen furrows.

Fig. 6. Orthotrichum cupulatum.

Sessile-fruited Bristle Moss (a).

Colour. Dark green.

Stems. Branched, half-inch long.

Leaves. Lanceolate, keeled, spreading; nerve large.

Flowers and Fruit. As in all the species, the capsule comes to maturity in twelve months after its first formation. Capsule immersed; lid short; calyptra light coloured. Summer.

Locality. On limestone rocks and walls.

Variety (Fig. 7). O. nudum.—Larger, leaves coarsely toothed at the apex; appearing above the leaves (exserted); calyptra without hairs.

Fig. 8. Orthotrichum anomalum.

Anomalous Bristle Moss (a).

Colour. Dark green.

Stems. Branched, branches few.

Leaves (b). Broadly lanceolate.

Flowers and Fruit. Capsule on short seta, with eight striæ; calyptra hairy. Barren flower at first terminal, but afterwards at the base of the young branches. Spring.

Locality. Very rare. Conway Castle. Mr. Wilson.

Fig. 9. Orthotrichum Sturmii.

Sturm's Bristle Moss (a).

Colour. Blackish green.

Stems. One inch long, branched.

Leaves. Broadly lanceolate; nerve strong.

Flowers and Fruit. Capsule eight furrowed, immersed. Summer.

Locality. Very rare. Luggielow, county Wicklow. Mr. Wilson.

Fig. 10. ORTHOTRICHUM SHAWII,

Shaw's Bristle Moss (a),

Colour. Dark green.

Stems. Short, sparingly branched.

Leaves. Large, lanceolate, slightly serrated at the apex, closely set.

Flowers and Fruit. Capsule eight furrowed, immersed.

Locality. Very rare. On an ash-tree near Dailly, Ayrshire. Mr. Wilson.

PLATE XVIII.

Fig. 1. Orthotrichum saxitile,

Tufted Bristle Moss (a).

Colour. Dark green.

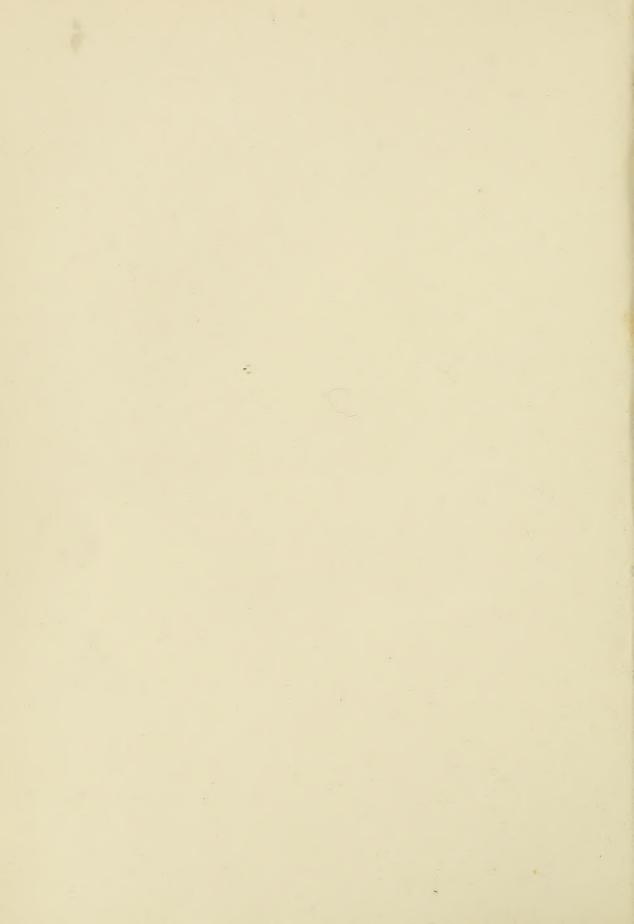
Stems. One inch long, with short, tuft-like branches.

Leaves (b). Rounded-lanceolate, spreading.

Flowers and Fruit. Capsule small (exserted). Summer.

Locality. On walls. Rare.







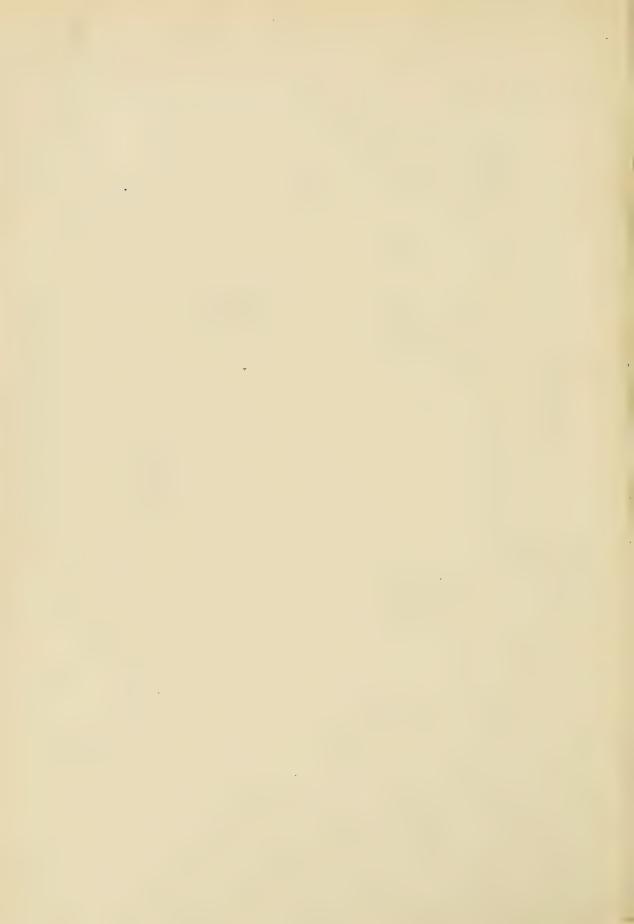


Fig. 2. Orthotrichum pumilum.

Little Bristle Moss (a).

Colour. Dark green.

Stems. Very short, branched.

Leaves (b). Lanceolate.

Flowers and Fruit. Capsule very small, immersed. Summer.

Locality. On trees. Rare. Found in Yorkshire.

Fig. 3. Orthotrichum tenellum.

Slender-fruited Bristle Moss (a).

Colour. Brownish.

Stems. Tufted, branches short.

Leaves (b). Lanceolate, obtuse, margin recurved, spreading.

Flowers and Fruit. Capsule gold colour, with orange ribs. Summer.

Locality. On trees. Rare.

Fig. 4. Orthotrichum Pallens.

Pale Bristle Moss (a).

Colour. Pale green.

Stems. Slender, branches slender.

Leaves (b). Lanceolate, obtuse; when wet widely spreading, erect when dry.

Flowers and Fruit. Capsule on short pedicel; beak short. Summer.

Locality. Trees. Rare. Found near York.

Fig. 5. Othotrichum stramineum.

Straw-coloured Bristle Moss (a).

Colour. Straw colour.

Stems. Much branched, tufted.

Leaves (b). Lanceolate, broad below; margin reflexed, spreading when dry.

Flowers and Fruit. Capsules numerous, oblong pear-shaped; calyptra bell-shaped (companulate), hairy. Summer,

Locality. Trees and rocks.

ORTHOTRICHUM FASTIGIATUM.

Close-tufted Bristle Moss.

Stems tufted, leaves ovate-lanceolate; capsule oblong-pyriform. Very rare.

ORTHOTRICHUM AFFINE.

Many-stalked Bristle Moss.

Colour. Yellow green.

Stems. Long, tufted, branched, especially near the summit.

Leaves (b). Oblong-lanceolate, margin recurved with glands (papillose); rather large.

Flowers and Fruit. Capsule long, striæ narrow, exserted; calyptra green; inner peristome of eight cilia. Summer.

Locality. Very common, on trees.

Fig. 7. Orthotrichum rupestre.

Rock Bristle Moss (a).

Colour. Dark green.

Stems. Long, branched.

Leaves (b). Spreading, rather recurved; lanceolate.

Flowers and Fruit. Capsule pyriform, striæ eight, very faint; peristome of sixteen teeth, in pairs. Summer.

Locality. On rocks.

Fig. 8. Orthotrichum speciosum.

Great Bristle Moss (a).

Colour. Yellow green.

Stems. Long, much branched.

Leaves (b). Lanceolate, spreading, serrated above; margin recurved below; papillose.

Flowers and Fruit. Capsule on long seta, yellow; striæ faint. Summer.

Locality. On trees. Rare. In Scotland.

Fig. 9. Orthotrichum Lyellii.

Lyell's Bristle Moss (a).

Colour. Greenish brown.

Stems. Long, very little branched.

Leaves (b). Very long, lanceolate; toothed above, scattered and spreading; very papillose.

Flowers and Fruit. Capsule oblong, apophysis tapering into the fruitstalk; outer peristome sixteen yellow teeth, inner sixteen red cilia. Dioicous. Summer.

Locality. Trees. Rare. Fruit rare.

Fig. 10. Orthotrichum rivulare.

Water Bristle Moss (a).

Colour. Blackish.

Stems. Long, slender, branched.

Leaves. Lanceolate-obtuse; margin recurved; nerve strong.

Flowers and Fruit. Capsule immersed, brown, pyriform; calyptra naked. Summer.

Locality. Trees by rivers, and floating from them in the water. Common.

Fig. 11. ORTHOTRICHUM SPRUCEI.

Spruce's Bristle Moss (a).

Colour. Yellow green.

Stems. Short, branches few; tufted.

Leaves (b). Sheathing (spathulate), nerve running to a point (apiculate).

Flowers and Fruit. Capsule pyriform, half immersed, striæ wide. Summer.

Locality. Trees and river banks.

Fig. 12. Orthotrichum obtusifolium.

Blunt-leaved Bristle Moss (a).

Colour. Yellowish green.

Stems. Very short, very little branched.

Leaves. Broadly lanceolate, apiculate, serrated above; margin recurved below; areolæ large, larger below.

Capsule. On short pedicel, pyriform. Summer.

Locality. Very rare. Near York. Mr. Wilson.

Fig. 13. Orthotrichum diaphanum.

Pointed-leaved Bristle Moss (a).

Colour. Yellow green.

Stems. Very short, branched.

Leaves. Lanceolate, with a long serrated white point, are olæ large and regular.

Flowers and Fruit. Capsule oblong, pyriform; very faintly striated, thin. Spring.

Locality. Walls and old wood.

Fig. 14. Orthotrichum leiocarpum.

Smooth-fruited Bristle Moss (a).

Colour. Yellow green.

Stems. Long, branched.

Leaves (b). Large, widely-spreading when wet, pressed to the stem when dry, lanceolate; margin recurved.

Flowers and Fruit. Capsule perfectly smooth; calyptra hairy or naked. Spring.

Locality. Common on trees.

II. Seta longer.

(a). Calyptra naked.

Fig. 15. Orthotrichum pulchellum.

Pretty Bristle Moss (a).

Colour. Very pale green.

Stems. Short, branches few.

Leaves (b). Soft, lanceolate, pointed (apiculate) crisped when dry; margin recurved.

Flowers and Fruit. Capsule eight-ribbed; peristome of sixteen red teeth, in pairs; calyptra naked. Spring.

Locality. Trees and walls.

(b). Calyptra hairy.

Fig 16. Orthotrichum Ludwigii.

Club-fruited Bristle Moss (a).

Colour. Yellow green.

Stems. Creeping, branched.

Leaves (b). In bundles (fascicled), spreading, twisted when dry; lanceolate.

Flowers and Fruit. Capsule on long seta, ovate. Autumn.

Locality. On trees. Scotland and Ireland.

Fig. 17. Orthotrichum crispulum.

Dwarf-curled Bristle Moss (a).

Colour. Yellow green.

Stems. Tufted, branched.

Leaves (b). Linear-lanceolate, crisped when dry.

Flowers and Fruit. Capsule oval, very thin and small, not contracted below the mouth. Spring.

Locality. Trees in the north of England.

Fig. 18. Orthotrichum crispum.

Great Curled Bristle Moss (a).

Colour. Yellow green.

Stems. Tufted, branched.

Leaves (b). Very long, linear-lanceolate, very much twisted, waved, dilated at the base.

Flowers and Fruit. Capsule with a long apophysis, which gradually tapers into the pedicel, ribs eight, broad. Autumn.

Locality. Common on trees.

Fig. 19. Orthotrichum Bruchii.

Bruch's Bristle Moss (a).

Colour. Yellow green.

Stems. Branched, thickly tufted.

Leaves (b). Linear-lanceolate, thickly tufted.

Flowers and Fruit. Capsule small, on long pedicel; calyptra naked. Summer.

Locality. On trees. Rare.

Fig. 20. Orthotrichum Drummondii.

Drummond's Bristle Moss (a).

Colour. Brownish green.

Stems. Creeping, branched; branches erect.

Leaves (b). Lanceolate, dilated at the base; nerve keeled.

Flowers and Fruit. Capsule large, oblong; seta long; calyptra torn at the base.

Autumn.

Locality. Trees in Scotland and Ireland.

Fig. 21. Orthotrichum Hutchinsii.

Miss Hutchins' Bristle Moss (a).

Colour. Yellow green.

Stems. Long, branched, tufted.

Leaves (b). Lanceolate, crowded, spreading straight (erecto-patent), nearly straight when dry.

Flowers and Fruit. Capsule pyriform, striated, tapering into the fruitstalk, beak Summer. long.

Locality. Rocks. Common.

ORTHOTRICHUM PHYLLANTHUM. Fig. 22.

Frizzled Bristle Moss (a).

Colour. Light green.

Stems. Branched, tufted.

Leaves (b). Very much crisped and curled when dry; nerve thick.

Flowers and Fruit. Always barren, but buds (gemmæ), (c) are found at the apex of the leaves. The plate gives their magnified form; with the naked eye they appear like brown dust upon the leaf.

Locality. Rocks and trees in every part of the world. Abundant on trees in Cornwall.



PLATE XIX.

ZYGODONTIEÆ.

Fig. 1. Characteristics of Order.

Capsule (a) pyriform, erect, striated, with an apophysis, either immersed or on a long seta. Lid with very long beak. Peristome variable, wanting, single, or double, the teeth of the outer thirty-two, but united into sixteen or eight; the inner peristome, composed of cilia, alternates with these. Calyptra very small; areolæ small and round (guttulate); leaves lanceolate, the margins never recurved. Plants tufted, on trees and rocks.

(a) Peristome none.

Fig. 2. Zygodon Lapponicus.

Lapland Yoke Moss (a).

Colour. Yellow green.

Stems. Tufted, branched, thickly covered with roots (radiculose).

Leaves (b). Spreading, linear-lanceolate, broad below, crisped when dry; the nerve not reaching to the point.

Flowers and Fruit. Monoicous. Seta short; capsule eight-ribbed; mouth wide; peristome none. Summer.

Locality. Crevices of rocks.

Fig. 3. Zygodon Mougeottii.

Mougeot's Yoke Moss (a).

Colour. Brownish.

Stems. Much branched, long, sparingly beset with roots.

Leaves (b). Spreading, long, linear-lanceolate; nerve reaching to the apex.

Flowers and Fruit. Dioicous. Capsule round; fruit very rare. Summer.

Locality. Common on moist rocks in a barren state.









Fig. 4. Zygodon viridissimus.

Green Yoke Moss (a).

Colour. Bright yellow green.

Stems. Short, not much branched, in the lower part radiculose.

Leaves (b). Apiculate, widely lanceolate, much spreading; nerve ceasing below the apex.

Flowers and Fruit. Dioicous. Seta long; capsule oval; mouth narrow; ribs faint; lid short. Spring.

Locality. On trees and rocks.

(b). Capsule with peristome.

Fig. 5. Zygodon conoideus.

Lesser Yoke Moss (a).

Colour. Yellow green.

Stems. Short, tufted.

Leaves. Broadly lanceolate, tufted.

Flowers and Fruit. Dioicous. Capsule pyriform, striated; beak long; seta long and slender. Spring.

Locality. Trunks of trees in Scotland. Frequent in England, but rare in fruit.

Fig. 6. Zygodon gracilis.

Slender Yoke Moss (a).

Colour. Brown and black.

Stems. One inch or more long, slender, branched.

Leaves. Ovate-lanceolate, coarsely toothed at the apex, spreading, not tufted.

Flowers and Fruit. Barren when found in England.

Locality. Malham in Yorkshire, Mr. Wilson's MS.

TETRAPHIDEÆ.

Fig. 7. Characteristics of Order.

Capsule on long seta, erect, regular, sub-cylindrical; peristome united to the columella, divided into four teeth, which are marked with longitudinal lines; calyptra mitriform. Plants perennial, in very thick patches on banks, and about the roots of trees. Stems much crowded, leaves small below.

Fig. 8. Tetraphis pellucida.

Pellucid Four-tooth Moss (a).

Colour. Dark green.

Stems. In thick patches, branched, radiculose below, slender.

Leaves (b). Small below, larger above, ovate-lanceolate, three-ranked.

Flowers and Fruit. Monoicous. Barren flower on a branch growing out of a female flower; capsule on long pedicel, with a red border at the mouth.

Autumn.

Locality. In shady places, roots of trees, &c.

Fig. 9. Tetrodontium Brownianum.

Mr. Brown's Moss (a).

Colour. Yellow green.

Stems. Scarcely any, branches none.

Leaves (b). Few, very long, linear, those of the perichetium ovate-acuminate.

Flowers and Fruit. Monoicous. Seta long, reddish; capsule oval; calyptra large. Summer.

Locality. Rocks in the north of England.

This is a singular species, almost without stem; the true leaves probably being those of the perichetium, the very long lower leaves being intermediate between branches and leaves. The only affinity between *Tetraphis* and *Tetrodontium* is in the structure of the peristome.

BUXBAUMIEÆ.

CHARACTERISTICS OF ORDER.

Capsule very large; calyptra small; peristome double, the outer rudimentary, consisting of layers of tissue, in *Buxbaumia* divided into teeth, the inner a plaited, conical membrane; columella large; stem, scarcely any; leaves few, the upper fringed.

Fig. 10. Buxbaumia aphylla.

Fairy Spoons. Leafless Buxbaumia (a).

Colour. Purplish brown.

Stems. Scarcely any, buried in the earth.

Leaves. Very few, minute, the lower roundish, the upper fringed.

Flowers and Fruit (b). Capsule spoon-shaped, oblique, large, the lower part concave, the upper flat, folding over the lower; lid small, the upper and lower portions of the capsule finally splitting; sporangium (c) large, united by filaments to the walls of the capsule, and having a pedicel within the apophysis. Dioicous.

Locality. Very rare. On earth or on decayed wood. More common in Scotland than in England.

Fig. 11, Diphyscium foliosum.

Leafy Buxbaumia (a). Ants' Egg Moss.

Colour. Dark green, capsule yellow.

Stems. Scarcely any.

Leaves (c). Few, the lower linear, the upper fringed with jointed cilia, which are probably paraphyses; the nerve of these very strong.

Flowers and Fruit. Dioicous. Capsule very large, ovate, immersed, like an ant's egg; columella (b) very large; spores minute. Spring and Summer.

Locality. Shady banks and rocks. Not uncommon.

PLATE XX.

POLYTRICHEÆ.

Fig. 1. Characteristics of Order.

Mosses rigid and aloe-like, with long, pointed leaves, long fruitstalks and large capsules; the calyptra, in most species, covered with silky hair (hence the name, *Hair-moss*). The summit of the columella (a) is very large, and the teeth (b) are attached to it, the spores, which are large, escaping through them. The hairs of the calyptra (c) are jointed.

ATRICHUM.

GENERIC CHARACTER.

Calyptra without hairs; lid with long beak.

Fig. 2. Atrichum undulatum.

Crane's Billed Moss (a).

Colour. Dark green.

Stems. One inch long, sometimes branched.

Leaves (b). Long and waved, nerved, upper part serrated, lanceolate.

Flowers and Fruit. Monoicous. Capsule smooth, with long curved beak. Spring.

Locality. Damp places. Common.

Fig. 3. Atrichum Crispum.

Wave-leaved Crane's Billed Moss (a).

Colour. Pale green.

Stems. Half-inch long, slender.

Leaves (b). Waved when dry, ovate-lanceolate, serrated, bordered; very transparent, cells large.

Flowers and Fruit. Barren when found in Britain.

Locality. Damp places. Not common.









OLIGOTRICHUM.

GENERIC CHARACTER.

Dioicous; barren flower cactus-like; capsule cylindrical; calyptra with very few erect hairs.

Fig. 4. Oligotrichum Hercynium:

Hercynian Hair Moss (a).

Colour. Dark green.

Stems. Short, not branched.

Leaves (b). Few, thick in texture, incurved; lanceolate above, base sheathing; margin curved inwards; back of nerve serrated.

Flowers and Fruit. Capsule roundish, contracted below the mouth. Summer. Locality. Common on damp banks, &c.

POGONATUM.

GENERIC CHARACTER.

Stems usually branched, with an underground stem (*rhizoma*); leaves stiff; base sheathing; nerve strong. Dioicous. Barren flower, cactus-like; capsule on long seta, rounded, regular; calyptra covered with hair.

Fig. 5. Pogonatum nanum.

Dwarf Hair Moss (a).

Colour. Dark green.

Stems. Not branched, short.

Leaves. Few, incurved, very minutely toothed at the summit, obtuse.

Flowers and Fruit. Capsule roundish, small; columella not winged. Autumn.

Locality. Common on damp banks.

Fig. 6. Pogonatum aloides.

Aloe-leaved Hair Moss (a).

Colour. Dark green.

Stems. Short, branched above frequently.

Leaves (b). Lanceolate, serrated, rigid; very few.

Flowers and Fruit. Capsule roundish, ovate, pale yellow; calyptra whitish; columella winged. Summer.

Locality. Damp banks. Common.

Fig. 7. Pogonatum uringerum.

Urn-fruited Hair Moss (a).

Colour. Dark green and reddish.

Stems. Branched, in large patches, bare below.

Leaves (b). Spreading in a tuft at the top, serrated, lanceolate; base short and sheathing.

Flowers and Fruit. Barren flower, orange colour; capsules abundant, cylindrical.

Locality. Banks and dry places. Common.

Fig. 8. Pogonatum alpinum.

Alpine Hair Moss (a).

Colour. Dark green.

Stems. Flat to the ground (decumbent) at the base; two to three inches long, erect above.

Leaves (b). Long, curved and spreading, serrated; back spinulose.

Flowers and Fruit. Seta red and thick; capsule dark brown; calyptra red brown. Summer.

Locality. Alpine districts. Common.

POLYTRICHUM.

GENERIC CHARACTER.

Capsule angular, with a round swelling at the base (apophysis); calyptra thickly covered with hairs; peristome of sixty-four or thirty-two teeth; stems very stout, with a subterranean rhizoma.

This family of Mosses was the earliest noticed. As "plants without flowers" the Polytrichums were noticed by Pliny, and by every succeeding botanist or naturalist. The beautiful calyptra procured for them the name of "Golden Maiden Hair" in every language, centuries before any other Moss received a distinguishing appellation. The "Golden Maiden Hair" was anciently dedicated to Venus; in after years, when the worship of Mary succeeded to the worship of Venus, the guardianship of the plant was transferred to her also, only one of many instances of the "confounding of the new with the old superstition." In accordance with the doctrine of signatures, it was believed that a wash made from "Golden Maiden Hair" would "strengthen and beautify" ladies' tresses, and be a true "auricomous fluid." The reader who may care to pursue farther the subject of the virtues of "Maiden Hair" is referred to Cowley's poem of the "Garden," where they are enumerated at great length.

(a.) Capsule six-angled.

Fig. 9. Polytrichum sexangulare.

Northern Hair Moss (a).

Colour. Dark green.

Stems. Two inches long, nearly erect.

Leaves (b). Base very broad, lanceolate above, slightly toothed at the apex.

Flowers and Fruit. Seta very thick, capsule and calyptra small. Autumn.

Locality. Mountains in Scotland.

Fig. 10. Polytrichum gracile.

Slender Hair Moss (a).

Colour. Pale green.

Stems. In thick tufts, two inches long.

Leaves (b). Base sheathing, tapering above, margin transparent; serrated.

Flowers and Fruit. Capsule on long seta, angles not very prominent, calyptra not quite covering the capsule. Summer.

Locality. Common in moorland districts.

Fig. 11. Polytrichum formosum.

Showy Hair Moss (a).

Colour. Dark green.

Stems. Very long, in loose tufts.

Leaves (b). Long, serrated, acute, spreading.

Flowers and Fruit. Seta thickish, capsule large, lid long, beaked, capsule horizontal; when old, brown. Summer.

Locality. Woods and hedges.

(b.) Capsule four-angled.

Fig. 12. Polytrichum commune.

Common Hair Moss (a).

Colour. Deep green.

Stems. From a few inches to a foot long, in very large thick patches; branched.

Leaves (b). Sheathing and dilated at the base, serrated both on the margin and back, twisted when dry, very long.

Flowers and Fruit. Barren flower, large and green; capsule large, calyptra reddish, seta reddish. Summer.

Locality. In heathy wild places, very abundant, and gathered in large quantities to make brooms, mats, and baskets.

Fig. 13. Polytrichum juniperinum.

Juniper-leaved Hair Moss (a).

Colour. Dark green.

Stems. In tufts, bare below, leafy above.

Leaves. Margin inflexed, not serrated, linear-lanceolate, base sheathing, bristle-pointed.

Flowers and Fruit. Capsule, with very acute angles; brown. Summer.

Locality. Common on heaths.

Fig. 14. Polytrichum strictum.

Narrow-leaved Hair Moss.

Colour. Dark green.

Stems. Simple or branched, long and slender.

Leaves. Short, not spreading, bristle-pointed.

Flowers and Fruit. Capsule small, seta long.

Locality. Not common. Mr. Wilson's MS.

Fig. 15. Polytrichum Piliferum.

Bristle-pointed Hair Moss.

Colour. Purplish green.

Stems. Not branched, in tufts; bare below.

Leaves. In tufts, bristle-pointed, margin turned in, not serrated.

Flowers and Fruit. Barren, flower crimson, seta orange-coloured, calyptra orange-coloured, capsule ovate. Spring.

Locality. Dry heathy places, wall-tops, &c.

PLATE XXI.

BRYEÆ. PART I.

TIMMIA.

GENERIC CHARACTER.

Capsule terminal, horizontal; peristome double, outer of sixteen teeth, inner of a membrane divided into sixty-four teeth. Leaves in eight rows.

Fig. 1. Timmia austriaca.

Sheath-leaved Timmia (a).

Colour. Dark green.

Stems. Long, decumbent below, erect above.

Leaves (b). Linear-lanceolate, base widely sheathing, coarsely serrated.

Flowers and Fruit. Monoicous, seta two inches long; but barren in Britain.

Locality. Banks of the Isla, above Airly Castle, Forfarshire.

AULACOMNION.

Fig. 2. Generic Character.

Growing in marshes or on banks; capsule oblong, curved above (cernuous), striated deeply; stems erect, radiculose; with buds (gemmæ) at their ends.

Fig. 3. Aulacomnion palustre.

Marsh Thread Moss (a).

Colour. Yellow green, rusty-looking, from the thick mats of radicles which beset the stem.

Stems. Long, much branched.









Leaves. Oblong-lanceolate, apex toothed.

Flowers and Fruit. Barren, flower round, seta long, capsule oval. Summer.

Locality. Peaty marshes. Common.

Fig. 4. Aulacomnion androgynum.

Bud-headed Thread Moss (a).

Colour. Emerald green.

Stems. Short, very little branched.

Leaves (b). Oblong-lanceolate, much smaller than in the last species.

Flowers and Fruit. Barren flower, bud-like, at the end of the branch (terminal); capsule oblong, cernuous; lid conical. Summer.

Locality. Woods and banks, never in marshes; fruit very rare.

ORTHODONTIUM.

Fig. 5. Generic Character.

Small and slender, capsule inclined, neck tapering, lid conical, calyptra small. Peristome double, outer of sixteen teeth, inner a membrane in sixteen divisions, when dry erect, when moist shrinking into the mouth of the capsule.

Fig. 6. Orthodontium gracile.

Slender Thread Moss (a).

Colour. Dark green.

Stems. Short, branched tufted, bristle.

Leaves (b). Crowded, crisped when dry, thread-like.

Flowers and Fruit. Monoicous, seta slender, curved, capsule inclined. Spring.

Locality. Sandstone rocks in the north of England.

LEPTOBRYUM.

Fig. 7. Generic Character.

Stems annual, in patches, very short; capsule inclined, pear-shaped; lid convex; peristome as Bryum.

Fig. 8. Leptobryum pyriforme.

Golden Thread Moss.

Colour. Glossy emerald green.

Stems. Short, branched.

Leaves. Thread-like, long.

Flowers and Fruit. Synoicous, capsule pear-shaped. Summer.

Locality. Sandstone rocks.



PLATES XXII. AND XXIII.

BRYEÆ. PART II.

BRYUM.

Fig. 1. Generic Character.

Capsule (a) pear-shaped or oblong, inclined or drooping, never erect, lid pointed or beaked, calyptra small. Peristome double (b), outer of sixteen teeth, barred, marked with a line down the centre, curving inwards when dry; inner, a membrane divided into sixteen alternating parts, having sometimes cilia between. Stems sending out branches (innovations) from the summit. Leaves in eight rows; areolæ (c) rhomboidal.

(a.) Leaves narrow, nerve ceasing below the apex.

Fig. 2. Bryum acuminatum.

Sharp-pointed Thread Moss (a).

Colour. Yellow green.

Stems. Branched, with innovations.

Leaves. Small below, larger above, nerve strong, apex serrated.

Flowers and Fruit. Monoicous, seta bent at the top; Capsule horizontal. Summer.

Locality. Scotch and Welsh mountains.

Fig. 3. Bryum Polymorphum.

Changeable Thread Moss (a).

Colour. Bright green.

Stems. With innovations, radiculose, half-inch long.

Leaves (b). Small below, larger above, oblong-lanceolate; nerve strong; apex serrulate.

Flowers and Fruit. Monoicous, capsules occasionally two together, horizontal-pyriform. Summer.

Locality. Scotch and Welsh mountains.

Fig. 4. Bryum elongatum.

Long-fruited Thread Moss (a).

Colour. Grass green.

Stems. Slender, with one innovation.

Leaves. Ovate-lanceolate, apex serrated.

Flowers and Fruit. Monoicous, capsule rather drooping and slender. Summer.

Locality. Rocks, &c. in mountain districts.

Fig. 5. Bryum Crudum.

Alpine Thread Moss (a).

Colour. Grass green.

Stems. Simple, radiculose.

Leaves. Ovate-lanceolate, the upper serrated, reddish and smaller below.

Flowers and Fruit. Synoicous or dioicous, capsule oval, irregular. Summer.

Locality. Banks and rocks.

FIG. 6. BRYUM NUTANS.

Pendulous Thread Moss (a).

Colour. Yellow green.

Stems. Red, tufted, one to two inches long.

Leaves (b). Spreading, erect when dry, apex serrulate, margin recurved below.

Flowers and Fruit. Synoicous, seta long, capsule drooping, oval-pyriform. Summer.

Locality. Dry banks.

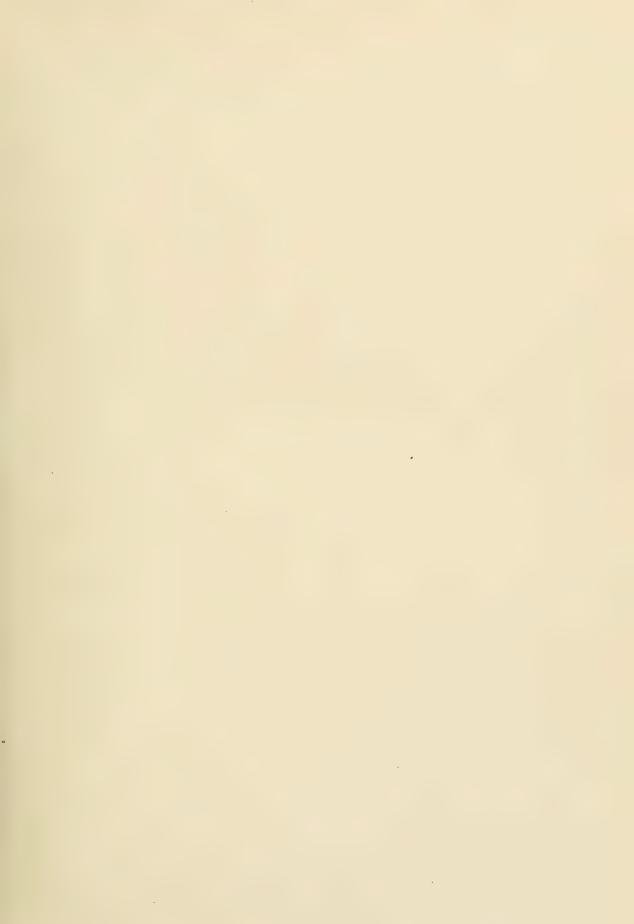








Fig. 7. Bryum annotinum.

Pale-fruited Thread Moss (a).

Colour. Bright green.

Stems. Short, loosely tufted.

Leaves (b). Lanceolate, areolæ large; nerve ceasing below the apex.

Flowers and Fruit. Dioicous, capsule and seta bright red. Summer.

Locality. Sandy banks and sandstone rocks.

Fig. 8. Bryum carneum.

Pink-fruited Thread Moss (a).

Colour. Light green.

Stems. Short, tufted, often decumbent at the base.

Leaves. Areolæ large, ovate-lanceolate.

Flowers and Fruit. Dioicous, seta succulent, bent immediately below the capsule; capsule large in proportion, pink; annulus none. Spring.

Locality. Moist banks.

(b). Leaves ovate. Dioicous.

Fig. 9. Bryum Wahlenbergii.

Wahlenberg's Thread Moss (a).

Colour. Dark green.

Stems. Loosely tufted, short.

Leaves (b). Ovate-lanceolate, apex serrated; nerve ceasing below it.

Fruit. Seta thick, capsule short and thick, lid small. Summer.

Locality. Wet places.

Fig. 10. Bryum Ludwigii.

Ludwig's Thread Moss (a).

Colour. Bright green.

Stems. Fertile stem decumbent at the base, tufted.

Leaves. Ovate-lanceolate, upper lanceolate, margin recurved.

Fruit. Seta long, slender, bent at the base; capsule small, seta bent below it. Autumn.

Locality. Clova Mountains, &c. near the line of perpetual snow. Fruit very rare.

Fig. 11. BRYUM DUVALII.

Duval's Thread Moss (a).

Colour. Yellow green.

Stems. Long, with numerous innovations.

Leaves (b). Acute, running parallel with the stem (decurrent); apex recurved; margins plane; areolæ large, undulated when dry.

Fruit. Capsule regular, pendulous.

Locality. Hart Fell, Moffat. Mr. Wilson's MS.

(c). Leaves ovate, broad.

Fig. 12. Bryum Marattii.

Marat's Thread Moss.

Colour. Light green.

Stems. Short, innovations long.

Leaves (b). Large, ovate; areolæ large; nerve prominent.

Fruit. Seta very long, bent below the capsule; capsule ovate-pyriform, regular.

Locality. Very rare in Britain. Mr. Wilson's MS.

Fig. 13. Bryum calophyllum.

Long-stalked Thread Moss (a).

Colour. Bright green.

Stems. Decumbent below, short, with innovations.

Leaves. Broadly ovate, nerve ceasing below the apex; areole large and regular.

Fruit. Seta very long; capsule pyriform, pendulous.

Locality. Very rare in Britain. Mr. Wilson's MS.

Fig. 14. Bryum neodamense.

Large-leaved Thread Moss (a).

Colour. Pale green.

Stems. Long, slender.

Leaves (b). Few and large, erect, ovate, apiculate, in a tuft at the summit.

Fruit. Not known in Britain.

Locality. Very rare. Mr. Wilson's MS. In East Cornwall.

Fig. 15. Bryum lacustre.

Small-fruited Thread Moss (a).

Colour. Light green.

Stems. Very short, with innovations.

Leaves (b). Broadly ovate, obtuse; margin recurved; nerve either reaching to the apex or ceasing below it.

Flowers and Fruit. Synoicous. Capsule pyriform, pendulous, small. Summer. Locality. Moist sandy places.

Fig. 16. Bryum Werneum.

Werne's Thread Moss (a).

Colour. Light green.

Stems. Half-inch long, innovations many.

Leaves (b). Lanceolate, apiculate, tufted.

Fruit. Seta long, bent below the capsule; capsule large, contracted in the middle, pendulous.

Locality. Very rare. Mr. Wilson's MS.

Fig. 17. Bryum Pseudotriquetrum.

Alpine-bog Thread Moss (a).

Colour. Brownish, very dark.

Stems. In patches, one to three inches long, with innovations.

Leaves (b). Ovate-lanceolate, larger above, bordered; nerve reaching beyond the apex.

Flowers and Fruit. Dioicous. Seta long and slender; capsule rather long. Summer.

Locality. Wet places, rocks and banks.

Fig. 18. Bryum Alpinum.

Alpine Thread Moss. (a).

Colour. Red brown.

Stems. Radiculose, with innovations.

Leaves (b). Much crowded, imbricated; margin recurved, erect; nerve rigid, beyond the apex.

Flowers and Fruit. Dioicous. Seta bent below, arched below the capsule; capsule red. Summer.

Locality. Moist rocks. Fruit rare.

Fig. 19. Bryum turbinatum.

Pear-fruited Thread Moss (a).

Colour. Pale green.

Stems. Short, branches few.

Leaves (b). Ovate-lanceolate, concave; margin flat; nerve to the apex.

Flowers and Fruit. Dioicous. Capsule pyriform, but not found in Britain. Summer.

Locality. Scarwheel, Manchester; near Fakenham, Norfolk. Mr. Fitt.

Fig. 20. Bryum pallens.

Pale-leaved Thread Moss (a).

Colour. Pale green.

Stems. Short, branches long and slender.

Leaves (b). Spreading, ovate-lanceolate, bordered; nerve excurrent.

Flowers and Fruit. Dioicous. Seta long; capsule pyriform, neck long, lid pointed. Summer.

Locality. Wet places.

PLATE XXIII.

(d). Leaves ovate, nerve beyond the point.

Fig. 1. Bryum uliginosum.

Bog Thread Moss (a).

Colour. Emerald green.

Stems. Short, radiculose, innovations long, tufted.

Leaves (b). Lanceolate-ovate; margins, above flat, below recurved; spreading and erect.

Flowers and Fruit. Monoicous. Capsule pendulous; mouth small and oblique. Summer.

Locality. Wet places. Common.

Fig. 2. Bryum pallescens.

Tall clustered Thread Moss (a).

Colour. Light green.

Stems. Long, bare below, much branched, radiculose, tufted.

Leaves. Large, ovate-lanceolate.

Flowers and Fruit. Monoicous. Capsule not quite pendulous, irregular; lid sharp-pointed (acuminate). Summer.

Locality. Rocks and walls in mountain districts; but not common.

Fig. 3. Bryum cernuum.

 $Drooping\ Thread\ Moss\ (a)\,.$

Colour. Very pale green.

Stems. Short, tufted; radiculose.

Leaves (b). Ovate-lanceolate, concave, radiculose; very crowded.

Flowers and Fruit. Synoicous, capsule large, swollen, outer and inner peristome adhering. Spring.

Locality. Rocks and walls.

Fig. 4. Bryum inclinatum.

Small-mouthed Thread Moss (a).

Colour. Light green.

Stems. Short, tufted; branches few.

Leaves (b). Ovate-acuminate; points long, spreading, crowded.

Flowers and Fruit. Synoicous; capsule pendulous, pyriform, mouth very small, red-bordered. May.

Locality. Walls and banks.

Fig. 5. Bryum intermedium.

Many-seasoned Thread Moss (b).

Colour. Yellow green; reddish below.

Stems. Very short; barren ones longer, tufted.

Leaves (b). Ovate-acuminate, narrow; nerve sometimes toothed.

Flowers and Fruit. Synoicous; capsule not quite pendulous, pyriform, mouth small; inner peristome perfect; fruit produced at all seasons, and seen in all stages on the same plant.

Locality. Walls and rocks, and dry places generally.

Fig. 6. Bryum bimum.

Lowland Bog Thread Moss (a).

Colour. Yellow green.

Stems. Long, in patches, much matted together, innovations long.

Leaves. Large, erect, eight-rowed, wide-spread on the innovations, oyate-lanceolate; apex sometimes slightly serrated.

Flowers and Fruit. Synoicous; seta long; capsule pendulous; when dry contracted below the mouth. Summer.

Locality. Marshes and wet places; a variety with short stems and bristlepointed leaves in dry spots.









Fig. 7. Bryum torquescens.

Twisting Thread Moss (a).

Colour. Yellow green.

Stems. Thickly tufted, branched; radiculose.

Leaves (b). Ovate; set horn-wise (cuspidate), very much twisted when dry; lower leaves lanceolate.

Flowers and Fruit. Synoicous; seta long; capsule pendulous; neck tapering into the seta. Summer.

Locality. Rocks and walls.

Fig. 8. Bryum obconicum.

Obconical Thread Moss (a).

Colour. Dark green.

Stems. Tufted, branched.

Leaves. Crowded, upper ones hair-pointed, ovate-acuminate, not twisted when dry.

Flowers and Fruit. Dioicous; capsule pendulous, very long; contracted in the middle. Summer.

Locality. Very rare. On walls, near Barnard Castle, Yorkshire. Mr. Spruce.

Fig. 9. Bryum capillare.

Greater Matted Thread Moss (a).

Colour. Yellow green.

Stems. Matted together, branched; radiculose.

Leaves (b). Spreading, twisted when dry; ovate-oblong; bordered, upper leaves with a long point.

Flowers and Fruit. Dioicous; capsule reddish, pendulous; oblong pyriform.

Locality. Very common everywhere, on walls, rocks, &c.

Variety.—Majus (Fig. 10 a, b). Leaves broader, point shorter, border wider, seta and capsule larger. Common.

The commonest and most variable of the species.

Fig. 11. Bryum Donianum.

Don's Thread Moss (a).

Colour. Light green.

Stems. Short, branched; radiculose; tufted.

Leaves. Ovate-oblong; apex serrated, border narrow, slightly crisped.

Flowers and Fruit. Dioicous; seta long; capsule conical, horizontal; lid apiculate.

Locality. Rocks and dry places. Rare.

Fig. 12. Bryum Billarderii.

Billardière's Thread Moss (a).

Colour. Light green.

Stems. Branched, innovations short.

Leaves (b). Ovate, serrulate, concave; margin recurved below; in whorls.

Flowers and Fruit. Dioicous; barren in Britain.

Locality. Wolsonbury Hill, Hurst Pierpoint.

Fig. 13. Bryum cæspiticum.

Lesser Matted Thread Moss (a).

Colour. Yellow green.

Stems. Branched, and with innovations also, short, tufted, radiculose.

Leaves (b). Ovate-lanceolate; larger at the summit; margin reflexed, straight when dry, erecto patent.

Flowers and Fruit. Dioicous; seta long; capsule pendulous, varying from ovate to pyriform. Summer.

Locality. Walls, &c. Common.

Fig. 14. Bryum sanguineum.

Purple Thread Moss (a).

Colour. Red purple.

Stems. Short, in patches, with innovations.

Leaves. Ovate-lanceolate, scattered, nerve broad.

Flowers and Fruit. Dioicous; seta slender; capsule pyriform; neck tapering. Summer.

Locality. On the ground in barren places. Common.

Fig. 15. Bryum murale.

Wall Thread Moss (a).

Colour. Yellow green.

Stems. Short, with innovations.

Leaves (b). Lanceolate; upper part serrated, acuminate.

Flowers and Fruit. Dioicous; capsule large, pyriform, drooping. Summer.

Locality. On walls. Mr. Wilson.

Fig. 16. Bryum atropurpureum.

Dark Thread Moss (a).

Colour. Purple green, very dark.

Stems. Short, branched.

Leaves (b). Ovate-acuminate; erect when dry, margin reflexed.

Flowers and Fruit. Dioicous; seta purple; capsule contracted below the lid. oval-oblong. Summer.

Locality. Banks and walls.

E. Leaves concave, closely imbricated, nerve not excurrent.

Fig. 17. Bryum Julaceum.

Slender-branched Thread Moss (a).

Colour. Brownish green.

Stems. Slender, in patches; branches thread-like (filiform).

Leaves (b). Ovate-concave, not serrated, obtuse.

Flowers and Fruit. Dioicous; seta arched, long and slender; capsule oblong.

Autumn.

Locality. Wet rocks.

Fig. 18. Bryum argenteum.

Silver Thread Moss (a).

Colour. Silvery green.

Stems. Very slender, branched, tufted.

Leaves (b). Imbricated, ovate, apiculate; nerve ceasing below the apex, not serrated.

Flowers and Fruit. Dioicous; seta slender, curved above; capsule oval, neck not tapering. Autumn.

Locality. On the ground, &c. Very common.

Fig. 19. BRYUM TIERII.

Tierian Thread Moss (a).

Colour. Brown red.

Stems. Very slender, with innovations.

Leaves (b). Roundish ovate; areolæ large, apex recurved.

Flowers and Fruit. Dioicous. Capsule very large, curved inwards, upper side rounded (gibbous), neck very long, mouth oblique. Autumn.

Locality. Crevices of rocks.

Fig. 20. Bryum demissum.

Club-fruited Thread Moss (a).

Colour. Yellow green.

Stems. Short, tufted, branched.

Leaves (b). Ovate-acuminate, margin recurved.

Flowers and Fruit. Dioicous. Seta arched; capsule curved, gibbous, mouth oblique. Autumn.

Locality. Crevices of rocks in Scotland.

F. Leaves large and broad, like Mnium.

Fig. 21. Bryum Tozerii.

Mr. Tozer's Thread Moss (a).

Colour. Pale green; stem red.

Stems. Short, in patches.

Leaves (b). Ovate, with a coloured border; lower ones remote, terminal larger.

Flowers and Fruit. Dioicous. Capsule pendulous, pyriform, lid conical. Spring.

Locality. West of England. Kent. Ireland, in damp shady places. Fruit rare.

Fig. 22. Bryum Roseum.

Rosette Thread Moss (a).

Colour. Emerald green.

Stems. Branched, base decumbent, radiculose, in patches.

Leaves. Lower very small, lanceolate; upper very large, in a star-like rosette, apiculate, serrated above; lower margin recurved. (See title.)

Flowers and Fruit. Dioicous. Barren flower round, yellow, conspicuous; seta very long; capsule oblong, incurved, pendulous, sometimes two or three together, rare.



PLATE XXIV.

BRYEÆ.

PART IV.

MNIUM.

Fig. 1. Generic Character.

Plants large and very beautiful; leaves large, broad, and gauze-like; stem erect, often with creeping roots, and branches rooting at their ends (stolons), the innovations from the lower part of the stem. Fruit terminal; barren flower discoid; capsule (a) drooping or horizontal, oval; peristome as in Bryum, lid convex, calyptra small. Areolæ (b) large, hexagonal or round, sometimes between the two.

(a). Leaves serrated.

Fig. 2. Mnium affine.

Many-fruited Thread Moss (a).

Colour. Light green.

Stems. Fertile ones erect, barren ones decumbent, radiculose.

Leaves (b). Lower distant, oval lanceolate; upper ovate, spreading in a tuft, apiculate, bordered; areolæ large.

Flowers and Fruit. Dioicous. Seta long, often several together; capsule pendulous, large. Spring.

Locality. Shady places, marshes, &c. Fruit rare.

Variety. Rugicum.—Stem shorter, leaves smaller; barren shoots erect.

Fig. 3. MNIUM CUSPIDATUM.

Pointed Thyme Thread Moss (a).

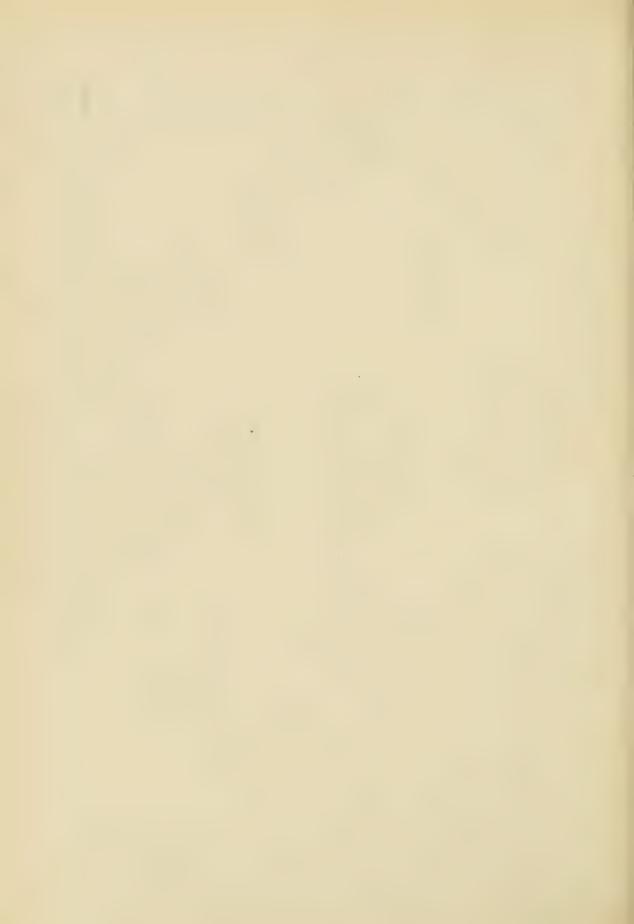
Colour. Dark green.

Stems. One inch long, densely tufted, radiculose.









Leaves (b). Lower ovate, spreading; upper ovate, apiculate, narrow at the base; border wide, serratures sharp, waved when dry.

Flowers and Fruit. Synoicous. Capsule solitary, not so large or pendulous as the last species. Spring.

Locality. Shady places on limestone.

Fig. 4. Mnium rostratum.

Long-beaked Thyme Thread Moss (a).

Colour. Dark green.

Stems. Short, base decumbent, shoots long and creeping.

Leaves. Oval oblong, obtuse, apiculate, serratures blunt, waved and crisped when dry.

Flowers and Fruit. Synoicous. Capsules oval, several together, pendulous, lid rostrate. Spring.

Locality. Moist rocks.

Fig. 5. MNIUM ORTHORHYNCHUM.

Small-leaved Thyme Thread Moss (a).

Colour. Grass green.

Stems. Long, tufted, radiculose.

Leaves (b). Lower very small and scattered; upper ovate-lanceolate, apiculate, in a tuft, doubly serrated; areolæ small.

Flowers and Fruit. Dioicous. Capsule not found in Britain.

Locality. Woods and shady places.

Fig. 6. Mnium serratum.

 $Serrated\ Thyme\ Thread\ Moss\ (a)\,.$

Colour. Yellow green.

Stems. Short, branches erect.

Leaves (b). Lower red and small, upper narrower, ovate-lanceolate; doubly serrated, bordered, tufted.

Flowers and Fruit. Synoicous; capsule on long seta; ovate, horizontal; solitary. Spring.

Locality. Moist rocks.

Fig. 7. MNIUM HORNUM.

Swan-neck Thread Moss (a).

Colour. Dark green.

Stems. In patches, stems and shoots erect; radiculose.

Leaves (b). Lower small, lanceolate, narrow; border broad, serratures double; nerve ceasing below the apex; spinulose.

Flowers and Fruit. Dioicous; barren flower, blackish and large; seta very long, upper part like a swan's neck; capsule large, ovate, pendulous. Spring.

Locality. Barren sandy places. Common.

Fig. 8. MNIUM UNDULATUM.

Palm-tree Moss (a).

Colour. Yellow green.

Stems. Erect from a creeping rhizoma, two to three inches long, with arched innovations from near the summit.

Leaves (b). Very large, waved; decurrent, strap-shaped (ligulate) bordered, serrated.

Flowers and Fruit. Dioicous; capsules several together; ovate, pendulous; seta orange. Spring.

Locality. Shady places; fruit rare. Abundant with fruit in Laneast Valley, Cornwall.

Perhaps this species is the most beautiful of Mosses. Its resemblance to a palm-tree makes it impossible to confound it with any other kind. The resemblance is not merely external, for the structure of the woody stem is precisely that of the date palm. With Climacium and Isothecium it may ultimately form a distinct group of "Tree Mosses."

Fig. 9. Mnium stellare.

Star-leaved Thyme Thread Moss (a).

Colour. Dark green.

Stems. Erect, in patches.

Leaves (b). Ovate, thick texture, serrated, not bordered; nerve ceasing below the apex.

Flowers and Fruit. Dioicous; capsule ovate, drooping; lid obtuse; fruit not found in Britain.

Locality. Shady places.

(b). Leaves nearly entire.

Fig. 10. MNIUM CINCLIDOIDES.

Large-leaved Thyme Thread Moss (a).

Colour. Light green.

Stems. One to four inches long, in patches; radiculose; branches slender.

Leaves (b). Very large, ovate; areolæ small, spreading; nerve broad.

Flowers and Fruit. Dioicous; capsule not found in Britain.

Locality. Bogs in Scotland.

Fig. 11. MNIUM PUNCTATUM.

$Dotted\text{-}leaved\ Thyme\ Thread\ Moss\ (a)\,.$

Colour. Light green.

Stems. Erect, radiculose, in patches.

Leaves (b). Very large, ovate, apiculate, of thin tough texture, entire, bordered; areolæ so large that to the naked eye the leaf appears dotted.

Flowers and Fruit. Dioicous; capsule ovate, half-pendulous, pale coloured; lid with long beak. Spring.

Locality. Wet places. Common.

Fig. 12. Mnium subglobosum.

Round-fruited Thread Moss (a).

Colour. Light green, stems black.

Stems. Erect; shoots erect, in patches.

Leaves (b). Obtuse, roundish ovate, bordered irregular; the nerve ceasing below the apex.

Flowers and Fruit. Synoicous; seta very long; capsule small, pendulous, roundish; lid rostrate. Spring.

Locality. Wet places.

CINCLIDIUM.

FIG 13. GENERIC CHARACTER (a).

Similar to *Mnium*, but differing in the structure of the peristome. Peristome double, outer consisting of sixteen short obtuse teeth, composed of layers (lamellæ); prominent on the inner side; the inner of a membrane, dome-shaped, perforated to correspond with the outer teeth, and narrow teeth, filling up the spaces between; (a) gives a portion highly magnified, (b) the entire peristome less so.

CINCLIDIUM STYGIUM.

Sooty Cupola Moss (c).

Colour. Leaves pale green; stem sooty, with a dense mass of radicles.

Stems. Thickly tufted and matted, erect.

Leaves (d). Ovate, apiculate, bordered; nerve excurrent or reaching quite to the apex.

Flowers and Fruit. Synoicous; seta very long and thread-like; capsule small, oval; pendulous, lid convex, not beaked. Summer.

Locality. Bogs; but not common.

PLATE XXV.

MEESIEÆ.

Fig. 1. Characteristics of Order.

Plants with branched stems; seta long; capsule irregular, mouth oblique peristome double, fructification terminal.

PALUDELLA.

Fig. 2. Paludella squarrosa.

Drooping-leaved Thread Moss (a).

Colour. Light green.

Stems. Long, branched, thickly radiculose.

Leaves (b). Spreading and recurved-ovate, lanceolate; apex serrated; nerve ceasing below the apex.

Flowers and Fruit. Dioicous; capsule oblique, irregular, elliptic; peristome double. Barren in Britain. Summer.

Locality. Wet bogs.

The only species of the genus.

MEESIA.

Fig. 3. Meesia uliginosa.

Dwarf Meesia (a).

Colour. Yellow green.

Stems. Short, tufted, erect; innovations from the apex; radiculose.

Leaves (b). Lanceolate, lower ones scattered, upper ones crowded; nerve broad, not continued to the apex.

Flowers and Fruit. Both monoicous and synoicous on the same plant; seta very long; capsule (Fig. 1) pyriform, gibbous at the back, mouth oblique; peristome double, outer of sixteen short teeth, inner longer, a membrane divided into sixteen processes almost to the base. Summer.

Locality. Wet places, chiefly in Scotland.

AMBLYODON.

Fig. 4. Amblyodon dealbatus.

Pale Thread Moss (a).

Colour. Yellow green.

Stems. Short, branched, tufted, bare of leaves, and radiculose below.

Leaves (b). Ovate-lanceolate; areolæ large.

Flowers and Fruit. Capsule (a) on long seta, terminal, solitary, irregular, gibbous at the back, nearly erect, mouth oblique; peristome (b), outer teeth short, obtuse, spreading; inner a membrane divided into sixteen narrow processes. Summer.

Locality. Wet mountainous places in Scotland and Ireland.

FUNARIEÆ.

Fig. 5. Characteristics of Order.

Stems very short, tufted, on earth, at first simple, afterwards branched; leaves in three or five rows. Capsule (a) solitary, pyriform, oblique, mouth small and oblique. Peristome (b) double, outer of sixteen teeth, with numerous prominent external bars, united at first to a disc, of which a portion remains after they are separated (c); inner a membrane divided into sixteen processes, opposite the teeth, and attached to them at their base. The seta much twisted, its mode of twisting being a character of each species. Every part of the plant is remarkably hygrometric.

Fig. 6. Funaria hygrometrica.

Common Cord Moss (a).

Colour. Emerald green.

Stems. Short, tufted.

Leaves (b). Large, ovate-lanceolate; nerved to the apex.

Flowers and Fruit. Capsule furrowed when dry, mouth with a border (annulus), oblique; seta arched, twisted to the right when dry. Spring and autumn.

Locality. Walls, &c. everywhere.

The calyptra slips half off the capsule when it is fully formed, and remaining









for some time with the beak turned downwards, the minute fructification bears an absurd resemblance to an elephant's head.

Fig. 7. Funaria Hibernica.

Irish Cord Moss (a).

Colour. Yellow green.

Stems. Short, tufted.

Leaves (b). Sharply serrated, narrower than in the next species; point very long.

Flowers and Fruit. Seta twisting to the left; capsule rather long and narrow.

Summer.

Locality. First discovered in Ireland, and since found at Matlock, &c. on limestone rocks.

Fig. 8. Funaria Muhlenbergii.

Muhlenberg's Cord Moss (a).

Colour. Yellow green.

Stems. Short, tufted.

Leaves. Ovate, wide, serratures blunt, acuminate.

Flowers and Fruit. Seta twisting to the right; capsule short, pyriform. Spring.

Locality. Common on calcareous soil.

ENTOSTHODON.

Fig. 10. Entosthodon Templetoni.

Templeton's Cord Moss (a).

Colour. Yellow green.

Stems. Short, tufted.

Leaves (b). Lower small, upper crowded in a tuft; ovate-acuminate; not toothed, but the margin uneven; areolæ large, hexagonal.

Flowers and Fruit. Monoicous. Capsule (Fig. 9) solitary, erect, pyriform; neck long; peristome single, inserted below the wide mouth; seta long. Summer.

Locality. Moist banks and shady places in various parts of England.

PHYSCOMITRIUM.

Fig. 11. Generic Character.

Capsule (a) erect, pyriform; much wrinkled; lid obtuse or apiculate. Peristome none. Calyptra (b) large and bladder-like, hence the name of the moss.

Fig. 12. Physcomitrium ericetorum.

Narrow-leaved Bladder Moss (a).

Colour. Yellow green.

Stems. Very short, in patches.

Leaves (b). Oval-lanceolate, narrow, bordered.

Flowers and Fruit. Monoicous; capsule erect, pyriform. Spring.

Locality. Moist banks.

Fig. 13. Physcomitrium fasciculare.

Fallow-field Bladder Moss (a).

Colour. Dark green.

Stems. Very short, in patches.

Leaves (b). Long and narrow, lanceolate acuminate, not bordered.

Flowers and Fruit. Monoicous; calyptra much inflated, splitting on one side. Capsule small.

Locality. Fallow fields.

Fig. 14. Physcomitrium pyriforme.

Pear-fruited Bladder Moss (a).

Colour. Light green.

Stems. Very short, tufted.

Leaves (b). Oval-oblong, apiculate, spreading; nerved almost to the apex, base sheathing, slightly serrated.

Flowers and Fruit. Monoicous; capsule erect; calyptra much divided at the base. Spring.

Locality. Moist banks, in great abundance.

Fig. 15. Physcomitrium sphæricum.

Dwarf Bladder Moss (a).

Colour. Yellow green.

Stems. Very short, in patches.

Leaves (b). Ovate-oblong, base sheathing, apiculate; nerve ceasing below the apex.

Flowers and Fruit. Monoicous; seta very short; capsule round, mouth wide.

Autumn.

Locality. Found in 1834, on the dried mud of pools in Cheshire, by Mr. Wilson; but it has never appeared since.



PLATE XXVI.

BARTRAMIEÆ.

Fig. 1. Characteristics of Order.

Plants tufted, on rocks and earth, fructification terminal. Capsule (a) round, furrowed; calyptra small; stems with innovations below the fructification, leaves lanceolate, or lanceolate-acuminate; areolæ (b) small, quadrate.

Fig. 2. Bartramidula Wilsoni.

Beardless Apple Moss (a).

Colour. Pale green.

Stems. Short, with innovations, in patches.

Leaves (b). Lanceolate, serrated.

Flowers and Fruit. Synoicous. Capsule pink, smooth, drooping; peristome none. Autumn.

Locality. Mountains in Ireland, Scotland, and Wales.

(a). Branches fastigiate. Monoicous.

Fig. 3. Bartramia rigida.

Rigid Apple Moss (a).

Colour. Yellow green.

Stems. Short, tufted, radiculose.

Leaves (b). Erect, straight, lanceolate, pointed, serrated, margin recurved.

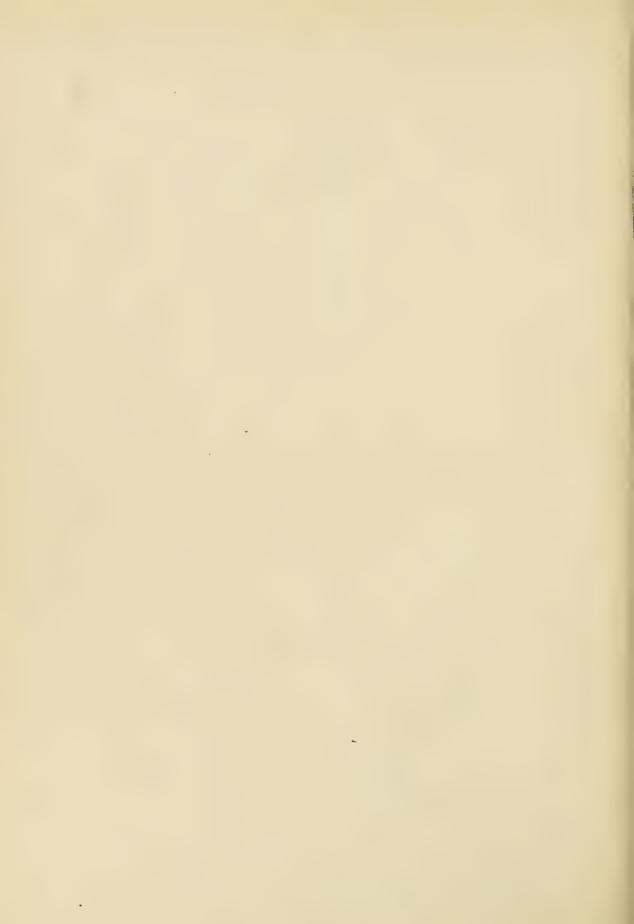
Capsule. Large, strongly furrowed, oblique. Autumn.

Locality. Shady banks in mountainous places in Ireland.









(b). Branches fasciculate. Dioicous.

Fig. 4. Bartramia fontana.

Fountain Apple Moss (a).

Colour. Yellow green.

Stems. Long, rusty, with radicles.

Leaves (b). Ovate-acuminate, folded at the base, toothed at the apex, margin recurved below; sometimes narrower and set star-wise.

Capsule. Seta very long; capsule large, red-brown, much furrowed, thick. Summer.

Locality. Wet places in mountainous districts.

Fig. 5. Bartramia cæspitosa.

Tufted Apple Moss (a).

Colour. Light green.

Stems. Long, branched.

Leaves (b). Ovate-lanceolate, serrated, the lower pressed to the stem, the upper spreading in a tuft.

Capsule. Barren in Britain.

Locality. Damp places; but not common. Found in Cornwall.

Fig. 6. Bartramia calcarea.

Thick-nerved Apple Moss (a).

Colour. Yellow green.

Stems. Long, with many innovations, radiculose.

Leaves (b). Ovate-lanceolate, crowded, concave; nerve very thick, serrated.

Capsule. Seta long; capsule large; leaves of perigonia very acute. Summer.

Locality. Wet places, in limestone.

(c). Stems dichotomously branched.

Fig. 7. Bartramia pomiformis.

Apple Moss (a).

Colour. Emerald green.

Stems. Long, in round cushions.

Leaves (b). Lanceolate, serrated, crowded, crisped when dry.

Capsule. Round, nearly erect, furrowed; peristome double. Spring.

Locality. Common in mountain districts.

Fig. 8. Bartramia Halleriana.

Haller's Apple Moss (a).

Colour. Yellow green.

Stems. Long, in tufts, branches irregular.

Leaves (b). Spreading, linear-lanceolate, base sheathing, serrated; nerve excurrent.

Capsule. Seta not as long as the leaves, slightly curved; capsule round. Summer.

Locality. Moist rocks.

Fig. 9. Bartramia Oederi.

Oeder's Apple Moss (a).

Colour. Yellow green.

Stems. Slender, tufted, one inch long.

Leaves (b). Distant, lanceolate, hair-pointed, serrated.

Flowers and Fruit. Synoicous. Capsule small, round, oblique. Summer.

Locality. Moist calcareous rocks.

Fig. 10. Bartramia ithyphylla.

Straight-leaved Apple Moss (a).

Colour. Yellow green.

Stems. Branched dichotomously, tufted.

Leaves (b). Base sheathing, lanceolate-subulate, straight when dry, serrated; nerve prominent.

Flowers and Fruit. Synoicous; seta long; capsule round, horizontal.

Locality. Mountain rocks.

Fig. 11. BARTRAMIA ARCUATA.

Curve-stalked Apple Moss (a).

Colour. Yellow green.

Stems. Very long; thickly radiculose, innovations many.

Leaves (b). Lanceolate, folded, sheathing at the base, spreading above, twisted when dry, serrulate.

Flowers and Fruit. Dioicous; seta curved; capsule pendulous, round. Autumn. Locality. Wet rocks. Fruit rare.

CONOSTOMUM.

Fig. 12. Conostomum boreale.

Cone-fringe Moss (a).

Colour. Yellow green.

Stems. Branched, radiculose, half-inch to two inches long; in thick matted tufts. Leaves (b). Lanceolate, acuminate, imbricated, five-rowed.

Flowers and Fruit. Dioicous; capsule roundish, erect, lid beaked; peristome (c) of sixteen deep red, barred teeth, united at the top into a cone. Autumn. Locality. Scottish mountains.



PLATE XXVII.

OREADEÆ.

The typical form of the order is unknown in Britain; its only representative is—

Fig. 1. Catoscopium nigritum.

Down-looking Moss (b).

Colour. Yellow green.

Stems. Slender, tufted, with innovations, radiculose.

Leaves (c). Lanceolate, spreading; areolæ small.

Flowers and Fruit. Dioicous. Seta slender; capsule (a) round, furrowed, shining, horny, neck suddenly bent, mouth oblique; peristome single, of sixteen barred teeth. Spring.

Locality. Moist rocks. Rare.

DISCELIEÆ.

Fig. 2. Discelium nudum.

Naked Moss (b).

Colour. Dark green.

Stems. Hardly any, the plant springing from a film (thallus); plants in large patches.

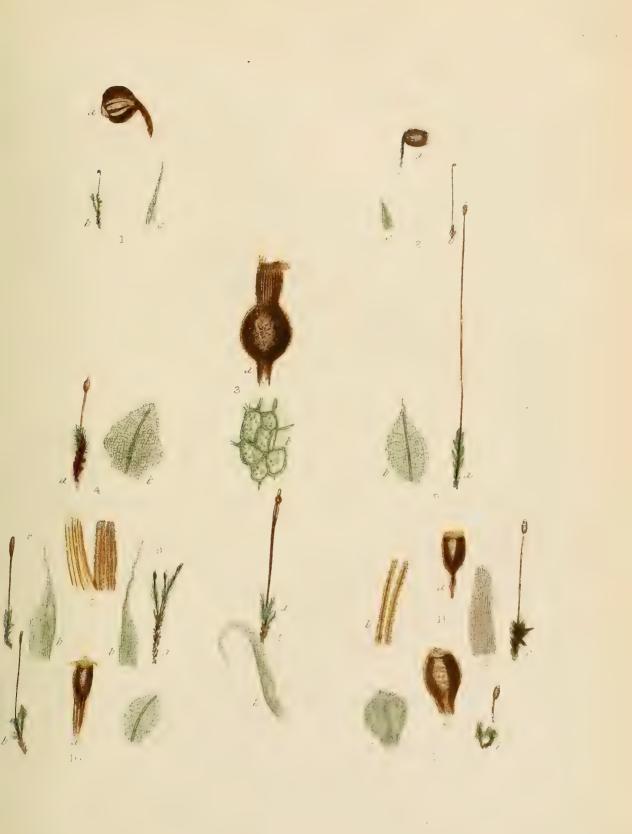
Leaves. Very few, lanceolate-ovate, imbricated, transparent (diaphanous).

Flowers and Fruit. Dioicous (?), both male and female plants having apparently the same rhizoma. Seta long, succulent, white; capsule (a) roundish, succulent, neck suddenly bent; peristome single, of sixteen teeth, lanceolate, barred, cleft half way.

Locality. Springing annually in immense patches upon clay banks in the north of England.









SPLACHNEÆ.

Fig. 3. Characteristics of Order.

Plants extremely succulent, and of lax texture; of rapid growth, chiefly upon animal refuse; seta long and succulent; capsule (a) very remarkable, itself ovate or cylindrical, with an apophysis much larger than itself, globose and of a different colour, the whole being flagon-shaped; peristome single, of sixteen teeth in pairs, singularly hygroscopic, curving inwards when moist, turning down upon the capsule when dry, yellow; spores regularly arranged round the columella; areolæ (b) very large.

Fig. 4. Splachnum vasculosum.

Large-fruited Collar Moss (a).

Colour. Lurid green, with purple radicles.

Stems. Long, simple or branched, radiculose.

Leaves (b). Roundish ovate, base narrow; areolæ large; nerve ceasing below the apex.

Flowers and Fruit. Dioicous; seta one inch long, succulent; apophysis purple. Summer.

Locality. Wet places among the Scottish mountains.

Fig. 5. Splachnum ampullaceum.

Flagon-fruited Collar Moss (a).

Colour. Dull green.

Stems. Branched, in patches.

Leaves (b). Oblong-lanceolate; serrated, base sheathing, crowded; upper much larger than the lower; areolæ very large.

Flowers and Fruit. Monoicous or Dioicous; seta thick, apophysis purple; very large. Summer.

Locality. Animal refuse, in Scotland.

Fig. 6. Splachnum sphæricum.

Round-fruited Collar Moss (a).

Colour. Dark green.

Stems. One inch long, tufted.

Leaves (b). Roundish ovate, acuminate, cellules very large; nerve ceasing near the apex.

Flowers and Fruit. Dioicous; seta extremely long; capsule small; apophysis not inflated. Summer.

Locality. Animal refuse in mountain districts.

The whole plant lax and succulent in texture.

TETRAPLODON.

Fig. 7. Generic Character.

Similar to *Splachnum*, but the plants are of longer duration and firmer texture; the capsule and apophysis are of the same colour, and the latter does not become larger after it is mature, nor does the seta lengthen after the capsule is formed. Peristome of sixteen teeth, at first in sets of four.

Fig. 8. Tetraplodon minoides.

Brown tapering Collar Moss (a).

Colour. Green, capsule brown.

Stems. Half-inch to three inches long, tufted.

Leaves (b). Elliptical, suddenly tapering to a point, the upper ones almost hair-pointed; crowded, imbricated, are olæ large.

Flowers and Fruit. Monoicous; seta one inch to two and a-half long; capsule oval, blackish; apophysis large; peristome inserted below the mouth of capsule. Summer.

Locality. Mountainous places, on animal refuse, &c.

Fig. 9. Tetraplodon angustatus.

Narrow-leaved Collar Moss (a).

Colour. Yellow green.

Stems. Much branched, tufted.

Leaves (b). Ovate; much acuminate, obscurely serrated, erecto-patent; crowded.

Flowers and Fruit. Monoicous; seta short; aphophysis narrow; twice as long as the capsule.

Locality. Animal refuse, among mountains. Rare.

TAYLORIA.

Fig. 10. Tayloria serrata.

Serrated Collar Moss (b).

Colour. Yellow green.

Stems. Very short, radiculose.

Leaves (c). Eight-rowed; apex recurved, ovate-lanceolate, serrated; areolæ large; nerve ceasing immediately below the apex.

Flowers and Fruit. Monoicous; seta long; capsule (a) oval, with a very long furrowed neck; peristome of sixteen or thirty-two teeth, in four sets, inserted below the mouth. Summer.

Locality. Animal refuse, in mountainous places.

DISSODON.

Fig. 11. Dissodon splachnoides.

Marsh Collar Moss (c).

Colour. Blackish green.

Stems. Dichotomous, radiculose, in patches.

Leaves (d). Ligulate; areolæ large; nerve waved and ceasing below the apex.

Flowers and Fruit. Seta long; capsule (a) ovate; neck short, peristome of sixteen equi-distant barred teeth; erect when dry. Summer.

Locality. Wet bogs on the Scottish mountains.

ŒDIPODIUM GRIFFITHIANUM.

Gouty Moss (b).

Colour. Dark green.

Stems. Fertile very short, barren one and two inches long; like the whole plant, very succulent; tufted.

Leaves (c). Roundish, large, the lower part with filaments; are olæ large; nerve ceasing below the apex.

Flowers and Fruit. Synoicous or monoicous; capsule (a) globular, the neck long and passing into the fruit-stalk, mouth small, lid obtuse; peristome none. Summer.

Locality. Only found in Great Britain, where it grows in the crevices of rocks.



PLATE XXVIII.

FILICOIDEI.

Mosses with leaves, in two rows, flat on each side of the stem. (Figs. 1 b, 2 b).

Fig. 1. Schistostega Pennata.

Cavern Moss (a).

Colour. Emerald green.

Stems. Very short, in dense patches; annual, from a perennial thallus (see Discelium).

Leaves (b). Two ranked, oval-rhomboid, joined together at their bases; the lower thread-like; are olæ very large; plant not hygroscopic.

Flowers and Fruit. Dioicous; capsule (c) very small, round, erect, mouth wide; peristome none, lid convex. Spring.

Locality. Moist banks and caverns.

FISSIDENTEÆ.

Fig. 2. Characteristics of Order.

Plants small, in patches; capsule on long slender seta, various, lid beaked; peristome (a) of sixteen deep red teeth, divided more than half way, with many bars, strongly hygroscopic. Leaves two ranked, flat on each side of the stem (bifarious). (See Dicranum).

I. Fruit Terminal.

Fig. 3. Fissidens exilis.

Slender Flat Moss (a).

Colour. Dark green.

Stems. Very short.

Leaves. Very small, denticulate, few.

Flowers and Fruit. Capsule erect, elliptic; lid long. Winter.

Locality. Shady banks.

Fig. 4. Fissidens viridulus.

Little Green Flat Moss (a).

Colour. Deep green.

Stems. Very short, in patches.

Leaves (b). Few; lanceolate, bordered; nerve to the apex.

Flowers and Fruit. Monoicous; capsule minute, oval, inclined; lid acuminate.

Autumn.

Locality. Shady banks.

Variety.—F. Incurvus, with curved capsule, spreading leaves, and fruit ripening in spring, "may be," Mr. Wilson says, "a distinct species."

Fig. 5. Fissidens bryoides.

Mungo Park's Moss (a).

Colour. Dark green.

Stems. Half-inch long.

Leaves (b). Spreading, apiculate, bordered.

Flowers and Fruit. Monoicous; capsule erect, elliptical; lid scarlet. Spring.

Locality. Shady places.

Variety.—F. aquatilis (Fig. 6 a). Stems one inch long; leaves (b) many, narrower and more distant; capsule smaller; seta shorter. Wet places.

Fig. 6. Fissidens Osmundoides.

Alpine Flat Moss (a).

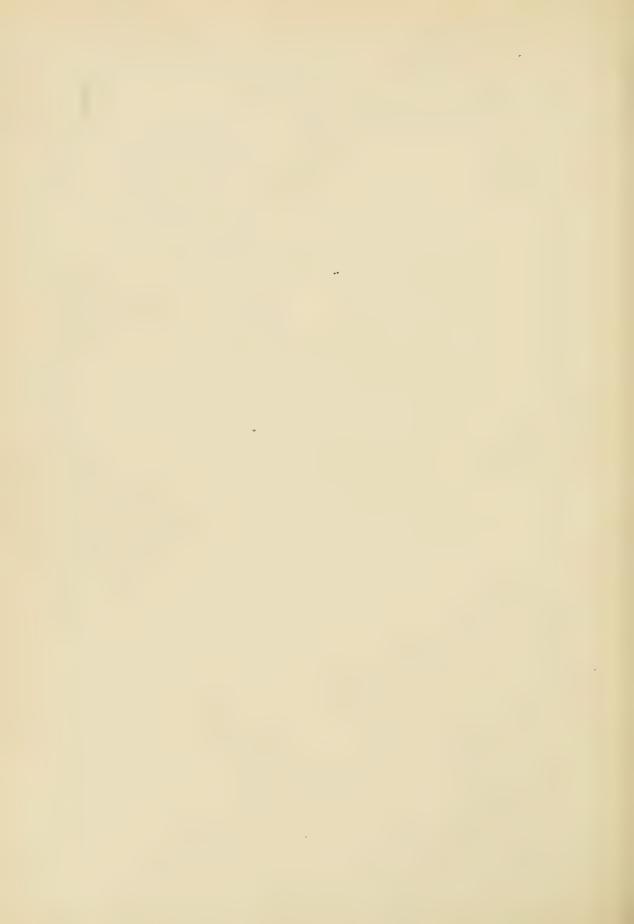
Colour. Dark green.

Stems. One inch long, tufted, radiculose.









Leaves (b). Somewhat ligulate, apiculate, not bordered; rather curved upwards, rigid.

Flowers and Fruit. Dioicous; capsule cylindrical, beak long. Spring.

Locality. Wet rocks in various parts of England; north of England. Mr. Wilson. Common in Cornwall.

Fig. 8. Fissidens asplenoides, (Var. Polyphyllus).

Fern-like Feather Moss (a).

Colour. Dark green.

Stems. Three to twelve inches long, branches arcuate.

Leaves (b). Ligulate, obtuse, curved when dry; nerve broad.

Flowers and Fruit. Dioicous; barren in Britain.

Locality. Wet rocks among mountains.

II. Fruit Lateral.

Fig. 9. Fissidens adiantoides.

Marsh Fern Moss (a).

Colour. Dark green.

Stems. Long, branched.

Leaves (b). Crowded, larger towards the middle, and becoming smaller again at the top, ovate-lanceolate, serrated; are olæ large.

Flowers and Fruit. Monoicous: capsule oval-oblong, inclined; lid rostrate. Spring.

Locality. Shady banks and wet places.

Fig. 10. Fissidens rupestris.

Rock Fern Moss (a).

Colour. Dark green.

Stems. Branched, arcuate.

Leaves (b). Ligulate, serrated above, much crowded.

Flowers and Fruit. Monoicous; capsule narrow, inclined, rostrate. Spring (?).

Locality. Bedd Gelert, Mr. Wilson's MS.

Fig. 11. Fissidens taxifolius.

Yew-leaved Fern Moss (a).

Colour. Dark green.

Stems. Branched from the base, clustered, half-inch long.

Leaves (b). Ligulate, apiculate; nerve transparent and sometimes waved.

Flowers and Fruit. Dioicous; both barren and fertile flowers almost upon the root; capsule inclined, cernuous, beak long. Winter.

Locality. Moist banks.

Fig. 12. Fissidens tamarindifolius.

Short-leaved Fern Moss (a).

Colour. Light green.

Stems. Very short, fasciculate.

Leaves. Elliptical, slightly falcate, few, distant apiculate, border transparent.

Flowers and Fruit. Monoicous; seta from the base of the barren shoots, long, red; capsule curved, lid conical. Spring.

Locality. Banks and fallow ground.



SECTION II.

PLEUROCARPI.

Side-fruited.

Mosses bearing fruit from the sides of the branches, the fertile flower bud-like.

PLATE XXIX.

ANÆCTANGIEÆ.

Fig. 1. Characteristics of Order.

Fructification pleurocarpous, with the habit of acrocarpous Mosses; stems erect, branched dichotomously, fastigiate; leaves crowded, small, areolæ (a) very small, nearly square (quadrate); capsule erect, oval, with a short neck; beak long and very oblique; peristome none. (See Gymnostomum, with which this order is closely allied.)

Fig. 2. Anæctangium compactum.

Compact Beardless Moss (a).

Colour. Yellow green.

Stems. Tufted, and very slender and fragile.

Leaves (b). Small, lanceolate, crowded; base very slightly serrated, lower areolæ largest.

Flowers and Fruit. Dioicous; seta slender, half-inch long; capsule small, smooth, mouth red. Autumn.

Locality. Trees, &c.

Fig. 3. Anæctangium pellucidum.

Transparent Beardless Moss (a).

Colour. Yellow green.

Stems. Very slender, tufted, half-inch long.

Leaves (b). Narrow, lanceolate; nerve ceasing below the apex, very transparent and delicate.

Flowers and Fruit. Dioicous; capsule not found in Britain.

Locality. Very rare. Near Inverary. Mr. Wilson's MS.

LEUCODONTEÆ.

Fig. 4. Characteristics of Order.

Plants creeping, branches (surculi) erect, incurved; leaves very closely imbricated, so that the branches appear thick, and tail-like; hence the name "squirrel-tail;" areolæ small; capsule erect, oval, lid conical or beaked; peristome of sixteen not hygroscopic, perforated teeth.

Fig. 5. Leucodon sciuroides.

Squirrel Tail Moss (a).

Colour. Yellow green.

Stems. Creeping, branches erect.

Leaves (b). Ovate acuminate; thickly imbricated, folded lengthwise (plicate).

Flowers and Fruit. Dioicous; capsule extremely rare. Autumn.

Locality. Trunks of trees, walls, and rocks.

Fig. 6. Leucodon Lagurus. Variety Borealis.

Hare-tail Moss (a).

Colour, Brown.

Stems. Branched, themselves slender, but from the imbrication of the leaves club-like and swollen.

Leaves (b). Oval, concave; suddenly acuminate, very faintly two nerved at the base.

Flowers and Fruit. Dioicous; barren in Britain.

Locality. A wet rock in North Uist, opposite St. Kilda. Mr. Wilson.

ANTITRICHIA.

Fig. 7. Antitrichia curtipendula.

Pendulous Wing Moss (a).

Colour. Yellow green.

Stems. Six inches long, or shorter, very straggling; procumbent; branched from each side (pinnate); branches rather curved.









- Leaves (b). Ovate-acuminate; spreading, slightly serrate above, margin recurved, nerve various; areolæ minute.
- Flowers and Fruit. Dioicous; seta curved; capsule elliptical; peristome double, yellow; the outer of sixteen teeth, united at the base, the inner of sixteen perforate cilia. Calyptra brown. Spring.
- Locality. Rocks and trees in mountainous districts. The singular trees known as "Wistman's Wood," on Dartmoor, are densely clothed with this moss.

LEPTODON.

LEPTODON SMITHII.

Curly Moss.

Colour. Yellow green.

- Stems. Pinnate twice (bi-pinnate); extremely hygroscopic; when dry and when wet hardly recognizable as the same; (b) represents the wet, (c) the dry moss; creeping.
- Leaves (d). Round, entire, margin recurved in the lower part; nerve ceasing above the middle.
- Flowers and Fruit. Dioicous; seta short; capsule (a) elliptical, beak rather curved; peristome of sixteen lanceolate teeth, with a slight trace of an inner peristome. Spring.
- Locality. Trunks of trees in the south of England.

ANOMODON.

Fig. 9. Anomodon viticulosus.

Long Tail Moss (a).

Colour. Yellow green.

Stems. Long, branches few, erect, brittle, tufted.

Leaves (b). Lingulate; nerve transparent, ceasing below the apex.

Flowers and Fruit. Dioicous; seta long, capsule erect, elliptical. Rare.

Locality. Rocks and trees in limestone districts.

PLATE XXX.

ISOTHECIEÆ.

PART I.

THAMNIEÆ. (TREE MOSSES).

Fig. 1. CHARACTERISTICS OF ORDER,

Capsule erect, symmetrical, distinguished by their peculiar habit; the rhizoma creeping, from which rises an erect stem, branched above, each plant forming a miniature tree.

PTEROGONIUM.

Capsule erect, on a long seta, regular, oblong. Peristome double, the outer of sixteen short, linear-lanceolate teeth; the inner a membrane divided into sixteen short teeth adhering to the outer.

Fig. 2. Pterogonium filiforme.

Thread-like Wing Moss (a).

Colour. Yellow green.

Stems. Slender, tufted, branches incurved.

Leaves (b). Elliptical, secund; margins recurved; serrated at the apex, one or two-nerved at the base.

Flowers and Fruit. Dioicous; seta twisted to the left; lid long. Fruit very rare in Britain. Spring.

Locality. Mountainous places in Scotland and Ireland, on rocks and tree trunks.

Fig. 3. Pterogonium gracile.

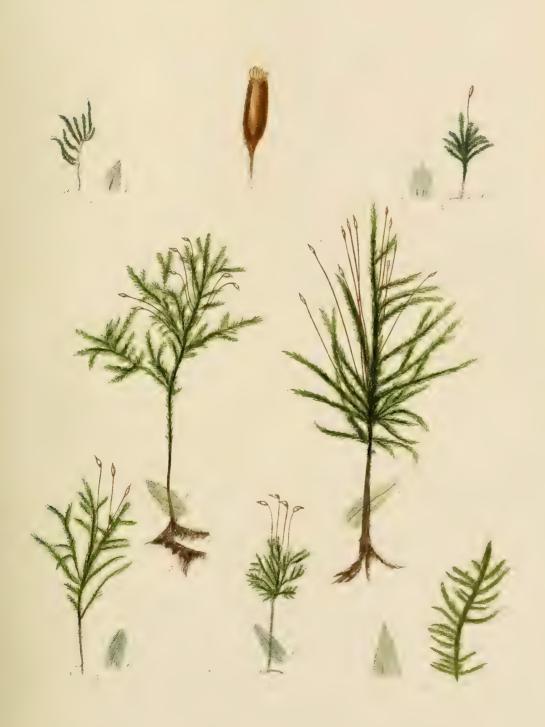
Slender Wing Moss (a).

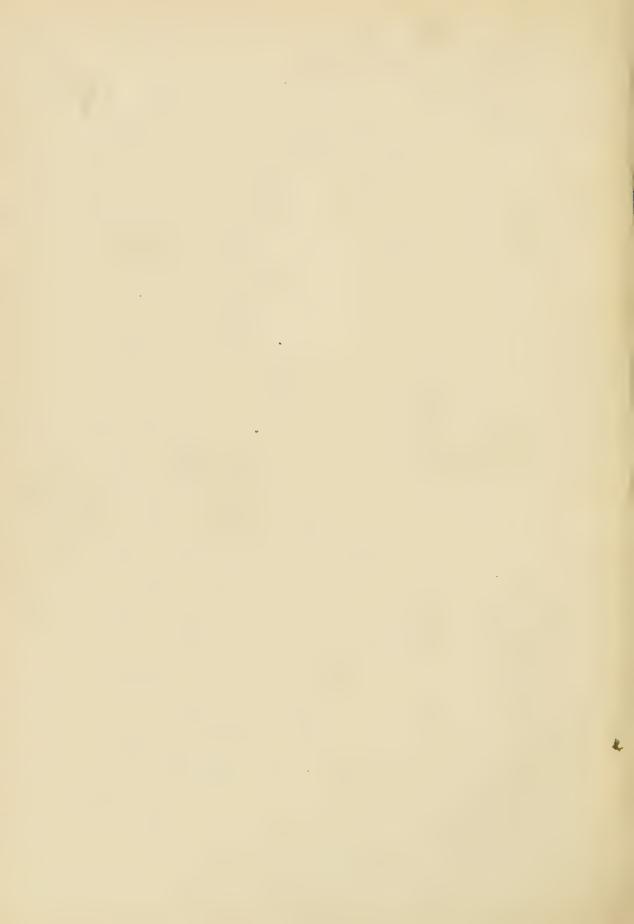
Colour. Yellow green.

Stems. Arched, branches incurved; growing in large patches.



*





Leaves (b). Imbricated; ovate-apiculate, serrate above, margins plane, two-nerved at the base.

Flowers and Fruit. Dioicous; capsule large, oblong; lid conical. Winter. Locality. Very common in mountain districts.

ISOTHECIUM.

Capsule erect or inclined; seta long; peristome double; outer of sixteen teeth, marked with a line down the middle; inner a membrane divided half way into sixteen processes, with cilia between them.

Fig. 4. Isothecium myurum.

Blunt-leaved Tree Moss (a).

Colour. Yellow green.

Stems. Two inches high, with stolons near the base, branches fasciculate; incurved.

Leaves (b). Ovate-oblong; serrate above, margin recurved below; nerve ceasing half way; those of the perichetium erect.

Flowers and Fruit. Dioicous; capsule oval, erect, or nearly so, beak rostrate; seta long. Autumn.

Locality. Rocks and trees.

Fig. 5. Isothecium myosuroides.

Acute-leaved Frond Moss (a).

Colour. Yellow green.

Stems. Slender, fasciculate; branches in a thick tuft, incurved.

Leaves (b). Ovate-acuminate, serrated; nerved to above the middle; those of the perichetium recurved.

Flowers and Fruit. Dioicous; capsules erect or inclined, abundant; seta curved. Winter.

Locality. On trunks of trees and rocks, spreading in large patches, and very common.

Fig. 6. Isothecium Alopecurum.

Fox-tail Frond Moss (a).

Colour. Dark green.

Stems. One to four inches in height, much branched, tree-like, the tuft of branches pinnated; base often with stolons.

Leaves (b). Ovate-lanceolate, spreading, serrated, nerved, crowded; nerve prominent; stem-leaves few and scale-like.

Flowers and Fruit. Dioicous. Capsule ovate, erect or inclined, not commonly found, but numerous when it does occur; beak oblique; peristome as Hypnum. Winter and Spring.

Locality. Rocks and trees in sub-alpine districts.

CLIMACIUM.

Branches spreading from all sides; stems without innovations, but when it has become prostrate it sends up lateral shoots, much in the way of the tree-like *Mnium undulatum*. Peristome double; outer of sixteen teeth, linear-lanceolate, base confluent; inner of sixteen linear processes, divided each into two segments connected at the apex.

CLIMACIUM DENDROIDES.*

Tree Moss.

Colour. Brownish green.

Stems. Two to four inches high, branched, branches very long.

Leaves (b). Ovate-lanceolate; apex serrulate; nerve ceasing below the apex.

Flowers and Fruit. Dioicous; seta very long; capsules elliptical, very numerous.

Autumn.

Locality. Bogs and marshes. Fruit not common.

^{*} Humboldt, in his "Aspects of Nature," speaks of this moss as "a true tree."

PART II.

CYLINDROTHECIUM, ETC.

CYLINDROTHECIUM.

Stem decumbent, pinnate. Peristome double; outer of sixteen lanceolate, not hygroscopic teeth, inserted below the mouth of the capsule; inner of sixteen cilia, marked with a line. Capsule erect, cylindrical.

Fig. 8. Cylindrothecium Montagnei.

Montagne's Cylinder Moss (a).

Colour. Yellow green, very shining.

Stems. Pinnate.

Leaves. Imbricated, elliptical, not serrated, obtuse; margin recurved at the base; nerveless, or two-nerved at the base.

Flowers and Fruit. Dioicous. Fruit unknown in Britain, and hitherto only found near Paris and in Switzerland.

Locality. Hilly districts, chiefly in limestone.



PLATE XXXI.

LESKEA.

Fig. 1. Generic Character.

Stem creeping, irregularly branched. Capsule (a) erect, lid short, conical. Areolæ (b) long, narrow, and wavy.

A. Leaves without strice.

Fig. 2. Leskea moniliformis.

Slender Leskea (a).

Colour. Yellow green.

Stems. Very slender, branches few.

Leaves (b). Round, concave, imbricated closely, nerveless.

Flowers and Fruit. Dioicous (?). Capsule not quite erect, base tapering. Very rare. Summer.

Locality. Alpine rocks.

Fig. 3. Leskea Latebricola.

Hidden Leskea (a).

Colour. Emerald green.

Stems. Very short, slender, branches few.

Leaves (b). Acute, lanceolate, margin recurved, base two-nerved.

Flowers and Fruit. Dioicous. Seta comparatively long, very slender; capsule minute, erect, base tapering. Winter.

Locality. Shady woods, on old roots of the Male Fern and decaying trunks of alders, often overlooked from its minuteness.









FIG. 4. LESKEA SPRUCEI.

Mr. Spruce's Leskea (a).

Colour. Yellow green.

Stems. Very slender, branches few, almost hair-like.

Leaves (b). Ovate-lanceolate, margin recurved; nerveless (?); few, spreading.

Flowers and Fruit. Dioicous. Capsule minute, ovate, erect, contracted below the mouth.

Locality. Shady rocks. Rare.

Fig. 5. Leskea Polyantha.

Many-flowered Leskea (a).

Colour. Yellow green.

Stems. Procumbent; branches erect.

Leaves (b). Nerveless, acuminate, narrow, turned upwards (assurgent).

Flowers and Fruit. Dioicous (?); capsule erect, oblong, not tapering; outer peristome inserted below the mouth. Autumn.

Locality. On trees, chiefly in the north of England and Scotland.

Fig. 6. Leskea pulvinata.

Green-cushioned Leskea (a).

Colour. Dark green.

Stems. Slender, procumbent; branches ascending; fastigiate.

Leaves (b). Ovate-acuminate; nerved, entire, margin flat, areolæ large.

Flowers and Fruit. Monoicous; capsule oval-oblong, base tapering; seta very slender. Summer.

Locality. Roots of trees.

Fig. 7. Leskea Polycarpa.

Many-fruited Leskea (a).

Colour. Dark green.

Stems. Procumbent, many branched, branches slightly curved and thickened upwards.

Leaves (b). Imbricated, secund, ovate-acuminate, nerve strong, margin reflexed below.

Flowers and Fruit. Monoicous; seta long; capsule erect, cylindrical; outer peristome of sixteen nearly white teeth, hygroscopic, when wet spreading, when dry bent in the form of a "staple." Autumn.

Locality. Roots of trees, near rivers.

B. Leaves striated.

LESKEA SERICEA.

Silky Leskea. Golden Moss.

Colour. Golden green, very shiny and silky looking.

Stems. Procumbent; branches erect, numerous, curved slightly.

Leaves (b). Imbricated; numerous, plicate, lanceolate-acuminate; nerve ceasing below the apex.

Flowers and Fruit. Dioicous; capsules cylindrical, erect, brown, numerous.

All winter.

Locality. Clothing trunks of trees, walls, and rocks, with thick shaggy fleeces.

A most lovely moss, the commonest of the genus.

Fig. 9. Leskea rufescens.

Red Leskea (a).

Colour. Red and green.

Stems. Erect, branched, in tufts.

Leaves (b). Long, erect, plicate, nerveless, lanceolate, much acuminate.

Flowers and Fruit. Dioicous; seta very long; capsule cylindrical and erect, or curved and rather inclined. Rare. Autumn.

Locality. Moist rocks.

LESKEA SUBRUFA.

Flat-leaved Leskea.

Colour. Red and green.

Stems. Slender and procumbent; branches erect, few.

Leaves (b). Lanceolate-acuminate; nerveless, erecto-patent, secund.

Flowers and Fruit. Dioicous (?); capsule not known in Britain, and very

Locality. Mountain rocks.



PLATE XXXII.

HYPNEÆ.

PART I.

Fig. 1. Characteristics of Order.

Mosses pleurocarpous, very variable in size and appearance, stems branched and mostly pinnate, and matted together in fleeces. Capsule (a) smooth, curved, cernuous, mostly horizontal, lid conical, rostrate; calyptra divided at the side. Peristome (b) very large and well defined; strongly hygroscopic, the outer of sixteen teeth, broad, lanceolate-acuminate, with prominent bars (trabeculæ) on the inner side, marked with a line down the middle; the inner a membrane in sixteen divisions, often perforated, alternating with the outer teeth, and having cilia between them. The inner peristome is in all mosses a kind of continuation of the membrane, lining the true seed-vessel (sporangium). Many species of Hypnum being dioicous, the fruit is very rare, even when the species itself is common. Areolæ (c) mostly long and undulated, but occasionally dot-like.

From their great abundance and conspicuous aspect some species of *Hypnum* are likely to be among the first to attract the amateur. The distinctions of the smaller species will be difficult at first, but may soon be mastered. Many divisions of the genus have been made, but the arrangement of the "Bryologia Britannica," has been followed here.

A. Leaves spreading every way.

1. Stems creeping, branched irregularly, or pinnate.

Fig. 2. Hypnum nitens.

Shining Feather Moss (a).

Colour. Yellow green, shining.

Stems. Erect, pinnate, with purple radicles; branches short.









Leaves (b). Acute, plicate, margin recurved, imbricated.

Flowers and Fruit. Dioicous; seta long; capsule arcuate, oblong. Rare. Summer.

Locality. Bogs in Scotland and the north.

Fig. 3. Hypnum albicans.

White Feather Moss (a.)

Colour. Pale green.

Stems. Erect, branches few, irregular.

Leaves (b) Imbricated; lanceolate-ovate; nerve reaching two-thirds of the way.

Flowers and Fruit. Dioicous; seta one inch long, capsule ovate, cernuous; rare. Winter.

Locality. Sandy places among grass.

FIG. 4. HYPNUM GLAREOSUM.

Streaky Feather Moss (a).

Colour. Light green.

Stems. Procumbent; pinnate or irregular.

Leaves (b). Crowded; ovate acuminate; points very long, slightly serrate at the apex; nerve strong, reaching above half-way.

Flowers and Fruit. Dioicous; seta short, capsule cernuous; lid acuminate. Winter.

Locality. Banks; but not common.

Fig. 5. Hypnum salebrosum.

Smooth-stalked Streaky Feather Moss (a).

Colour. Light green.

Stems. Procumbent; slightly pinnate.

Leaves. Not much striated; nerved more than half-way, almost serrated; ovate-acuminate, points shorter than in the last species.

Flowers and Fruit. Monoicous; seta slender, smooth; capsule short, ovate; lid conical. Winter.

Locality. Grassy banks.

Fig. 6. Hypnum lutescens.

Rough-stalked Yellow Feather Moss (a).

Colour. Greenish yellow.

Stems. Nearly erect, branches irregular, spreading.

Leaves (b). Ovate-lanceolate, entire, acuminate, striated; nerve ceasing below the apex.

Flowers and Fruit. Monoicous; seta long, rough; capsule oblong, cernuous. Spring.

Locality. Limestone rocks and sandy banks.

Fig. 7. HYPNUM PLICATUM.

Plaited-leaved Feather Moss (a).

Colour. Brownish green.

Stems. Procumbent, creeping, branched irregularly; branches ascending, curved.

Leaves (b). Imbricate, ovate-acuminate, nerved above half-way, margin recurved; very much plicate.

Flowers and Fruit. Dioicous; capsule ovate-oblong, cernuous; barren in Britain.

Locality. Alpine rocks. Ben Lawers, Mr. Lyon in "Bryologia Britannica."

B. Leaves smooth, mostly serrated.

1. Fruitstalk rough.

Fig. 8. Hypnum plumosum.

Rusty Feather Moss (a).

Colour. Rusty.

Stems. Creeping, pinnate, but also with long erect branches.

Leaves (b). Ovate, acuminate, concave, serrated; nerved to near the apex, secund.

Flowers and Fruit. Monoicous; seta one inch long; capsule cernuous; lid acute. Winter.

Locality. Shady places in mountainous districts; easily distinguished by its bright colour.

Fig. 9. Hypnum populeum.

Matted Feather Moss (a).

Colour. Yellow green, silky.

Stems. Creeping, pinnate irregularly, matted.

Leaves (b). Ovate-lanceolate, margin reflexed, almost (sub) serrulate; nerved to the apex, acuminate.

Flowers and Fruit. Monoicous; seta short; capsule ovate, not very cernuous; lid acute, conical, remaining long. Winter.

Locality. Walls, &c. Very common.

Fig. 10. HYPNUM REFLEXUM.

Reflexed Feather Moss (a).

Colour. Yellow green.

Stems. Procumbent, arched, extremities rooting, sub-pinnate.

Leaves (b). Ovate acuminate, serrated, nerved to the apex; heart-shaped (cordate), points reflexed when dry; areolæ large.

Flowers and Fruit. Monoicous; seta short; capsule small, horizontal, roundish. Spring.

Locality. Mountains in Scotland.

Fig. 11. HYPNUM GLACIALE.

Snow Feather Moss (a).

Colour. Yellow green.

Stems. Irregularly pinnate, procumbent; branches with slender ends (attenuated).

Leaves (b). Ovate-acuminate, secund, serrulate, nerve broad, ceasing below the apex.

Flowers and Fruit. Monoicous (?). Seta short, rather thick; capsule ovate, cernuous; lid conical, acuminate.

Locality. Ben Lawers. Mr. Wilson's MS.

Fig. 12. Hypnum velutinum.

Velvet Feather Moss (a).

Colour. Yellow green.

Stems. Creeping, in patches, branched, branches erect, crowded.

Leaves (b). Spreading, ovate-acuminate, serrulate, nerved to near the apex.

Flowers and Fruit. Monoicous; seta short; capsule roundish; lid apiculate. Winter.

Locality. Common on walls and roots of trees, &c.

Fig. 13. Hypnum illecebrum.

Alluring Feather Moss (a).

Colour. Light green.

Stems. Procumbent, sub-pinnate, branches incurved, obtuse.

Leaves (b). Ovate-apiculate, concave, serrated, nerved to above half-way.

Flowers and Fruit. Seta short, capsule oval-oblong, bent at the union with the seta. Autumn.

Locality. Banks and rocks, especially near the sea.

Fig. 14. Hypnum cæspitosum.

Green Patch Feather Moss (a).

Colour. Grass green.

Stems. Creeping, pinnate, branches very short, in thick patches.

Leaves (b). Ovate, pointed, serrulate; margin plane, serrulate; nerved above half-way.

Flowers and Fruit. Dioicous; capsule oblong, sub-erect; lid half its length. Winter.

Locality. Walls and trunks of trees in places liable to inundation, in the new red sandstone.

Fig. 15. Hypnum rutabulum.

Rough-stalked Feather Moss (a).

Colour. Grass green.

Stems. Procumbent, extremity rooting, branched irregularly, branches erect.

Leaves. Large, thin, ovate-acuminate, serrulate, slightly striated when dry, nerved to above half-way.

Flowers and Fruit. Monoicous; seta long, very rough; capsule rather large, arched, oblong; lid conical. Winter.

Locality. Walls and trees, &c. Very common.

Fig. 16. HYPNUM RIVULARE.

Rivulet Feather Moss (a).

Colour. Yellow green.

Stems. Pinnate, branches long, slender, attenuated.

Leaves (b). Ovate, delta-shaped (deltoid), serrated, striated, nerve to above half-way.

Flowers and Fruit. Dioicous; seta long; capsule ovate, cernuous; lid conical, barren when growing in water. Winter.

Locality. By rivulets in shady places, and in water.



PLATE XXXIII.

HYPNEÆ (continued).

2. Lid rostrate.

Fig. 1. Hypnum crassinervum.

Thick-leaved Feather Moss (a).

Colour. Dark green.

Stems. Creeping, branches erect, few.

Leaves (b). Ovate-acuminate, serrated; margin reflexed, concave; nerve thick, to above half-way.

Flowers and Fruit. Dioicous; seta rough, capsule narrow, ovate, cernuous, beak long. Winter.

Locality. Shady rocks, chiefly on limestone.

Fig. 2. Hypnum Piliferum.

Hair-pointed Feather Moss (a).

Colour. Yellow green.

Stems. Procumbent, pinnate, branches attenuate.

Leaves (b). Imbricated, ovate, points hair-like, serrated, nerved half-way up.

Flowers and Fruit. Dioicous; seta rough; capsule cernuous, oblong; lid as long as the capsule. Winter.

Locality. Shady banks and woods; fruit rare.

Fig. 3. Hypnum cirrhosum.

Tendril-pointed Feather Moss (a).

Colour. Brownish green.

Stems. Procumbent, cylindrical, branches few, short, obtuse.

Leaves (b). Closely imbricated, concave, pointed, nerved faintly half-way.

Flowers and Fruit unknown in any locality.

Found on the summit of Ben Lawers.









Fig. 4. Hypnum prælongum.

Prolonged Feather Moss (a).

Colour. Emerald green.

Stems. Arched or procumbent, doubly (bi) pinnate, branches slender, attenuated, numerous.

Leaves (b). Heart-shaped (cordate) acuminate on the stem, lanceolate-acuminate on the branches, serrated, spreading in various directions (squarrose).

Flowers and Fruit. Dioicous; seta rough; capsule oblong, cernuous; beak long.
Winter.

Locality. Moist shady banks.

A very beautiful species, in deep velvet-like patches and mats.

Fig. 5. Hypnum dispalatum.

Emerald Feather Moss (a).

Colour. Emerald green.

Stems. Procumbent, sub-pinnate.

Leaves. Ovate-lanceolate, serrulate, nerved above half-way, squarrose, large.

Flowers and Fruit. Barren in Britain.

Locality. Clifton, Somerset. Mr. Wilson's MS.

Fig. 6. Hypnum Swartzii.

Swartz's Feather Moss (a).

Colour. Emerald green.

Stems. Procumbent, creeping, not arched, branches short, curved; few.

Leaves (b). Spreading, nearly flat on each side, cordate; ovate-lanceolate, serrate, nerved above half-way.

Flowers and Fruit. Dioicous; capsule short, roundish ovate, not bent at the neck. Winter.

Locality. Moist banks.

Fig. 7. Hypnum speciosum.

Showy Feather Moss (a).

Colour. Emerald green.

Stems. Creeping, with erect branches.

Leaves (b). Large, ovate, acuminate, serrated; nerve reaching nearly to the apex.

Flowers and Fruit. Synoicous; seta long, rough; capsule ovate, tapering at the base, cernuous. Winter.

Locality. Stones near springs, and roots of trees.

Fig. 8. Hypnum Teesdalii.

Teesdale's Feather Moss (a).

Colour. Dark green.

Stems. Slender, creeping, branches erect, slender.

Leaves (b). Spreading on each side (complanate), spreading, lanceolate, serrate; nerve nearly the whole length.

Flowers and Fruit. Monoicous; seta rough; capsule ovate; lid nearly as long. Summer.

Locality. Shady moist rocks.

Fig. 9. Hypnum pumilum.

Dwarf Feather Moss (a).

Colour. Yellow green.

Stems. Procumbent, creeping, thread-like (filiform), pinnate, branches extremely slender.

Leaves (b). Ovate-acuminate, serrate, very minute, nerved half-way or more, areolæ large, shrinking when dry.

Flowers and Fruit. Dioicous; seta purple; capsule short; annulus distinct; lid obliquely rostrate. Winter.

Locality. Shady places.

FIG. 10. HYPNUM STRIATUM.

Striated Feather Moss (a).

Colour. Grass green.

Stems. Tufted, procumbent, pinnate; branches drooping, attenuate.

Leaves (b). Cordate, acuminate, striated, serrated; nerve reaching more than half-way.

Flowers and Fruit. Dioicous; seta long; capsule large, arcuate; lid long, with a curved beak. Winter.

Locality. Woods, &c.

Fig. 11. Hypnum striatulum.

Lesser Striated Feather Moss (a).

Colour. Grass green.

Stems. Creeping, tufted, branches erect, much crowded; sometimes bi-pinnate.

Leaves (b). Ovate-acuminate, erecto-patent, serrated, nerved more than half-way, striated.

Flowers and Fruit. Dioicous; seta one inch long, capsule cernuous, beak curved. Winter.

Locality. Shady rocks.

Fig. 12. Hypnum circinnatum.

Curving Feather Moss (a).

Colour. Grass green.

Stems. Erect, pinnate, branches fasciculate, drooping, mostly branched from the extremity.

Leaves (b). Narrow, ovate-acuminate, serrate, nerved above half-way, crowded, secund.

Flowers and Fruit. Dioicous; capsule ovate-oblong, lid shorter. Fruit only found hitherto in Algiers and the Ionian Islands.

Locality. Limestone rocks and walls.

Fig. 13. Hypnum ruscifolium.

Long-beaked Water Feather Moss (a).

Colour. Dark green.

Stems. Creeping, branches procumbent, few, irregular.

Leaves (b). Roundish ovate, serrated, nerved almost to the apex, broad, spreading on each side.

Flowers and Fruit. Monoicous; capsule ovate, cernuous, lid rostrate. Winter. Locality. Rocks and stones near water.

Fig. 14. Hypnum confertum.

Clustered Feather Moss (a).

Colour. Yellow green.

Stems. Creeping, pinnate, branches nearly erect, in patches.

Leaves (b). Much crowded, secund, concave, ovate-acuminate, nearly serrate, nerved half-way.

Flowers and Fruit. Monoicous; seta one inch long, capsule ovate, cernuous, brown. Autumn.

Locality. Rocks and walls, &c.

Fig. 15: HYPNUM MEGAPOLITANUM.

Overlooked Feather Moss (b).

Colour. Yellow green.

Stems. Creeping, branches attenuated.

Leaves (b). Ovate-acuminate, serrate, erecto-patent; nerve very short.

Flowers and Fruit. Monoicous (?). Seta long; capsule small, short; lid long.

Locality. Rocks and Walls (?). Mr. Wilson's MS.

Fig. 16. Hypnum murale.

Wall Feather Moss (a).

Colour. Dark green.

Stems. Creeping, branches roundish, erect, crowded.

Leaves (b). Roundish ovate, suddenly acuminate, serrated, concave, nerve reaching half-way.

Flowers and Fruit. Monoicous; capsule ovate, nearly erect, lid short. Autumn. Locality. Walls and rocks.

Fig. 17. Hypnum tenellum.

Tender Feather Moss (a).

Colour. Emerald green, silky.

Stems. Creeping, branches erect, fasciculate, short.

Leaves (b). Subulate, entire; nerve to more than half-way.

Flowers and Fruit. Monoicous; seta short, slender; capsule ovate, beak curved.

Autumn.

Locality. Walls and rocks, especially chalk.

HYPNUM CATENULATUM.

Thread-like Feather Moss.

Colour. Blackish green.

Stems. Creeping, pinnate; branches erect, filiform.

Leaves (b). Imbricated, ovate, minute, nerved half-way, margin recurved below.

Flowers and Fruit. Dioicous; capsule oval-oblong; not known in Britain.

Summer.

Locality. Alpine rocks.

PLATE XXXIV.

HYPNEÆ (continued).

3. Lid conical.

FIG. 1. HYPNUM ATROVIRENS.

Brown Mountain Feather Moss (a).

Colour. Brown green.

Stems. Prostrate, branches few, irregular, and very variable; when barren, long and slender, when fertile, short.

Leaves (b). Ovate-lanceolate, sub-serrate, acuminate, imbricated, nerve almost to the apex; margin recurved below.

Flowers and Fruit. Dioicous; capsule small, cylindrical, slightly cernuous. Rarc. Spring.

Locality. Alpine rocks.

Fig. 2. Hypnum fluviatile.

Brook-side Feather Moss (a).

Colour. Brownish.

Stems. Procumbent, branches prostrate; few.

Leaves (b). Ovate, imbricated, not serrated, incurved when dry; nerve thick.

Flowers and Fruit. Monoicous; seta thick, capsule long, large, curved. Summer.

Locality. Rocks and stones in rivulets.

Fig. 3. Hypnum irriguum.

Rigid Brook-side Feather Moss (a).

Colour. Dark green.

Stems. Stiff, pinnate.

Leaves (b). Spreading, secund, acuminate, serrulate; nerve strong, deltoid-ovate; not crowded.









Flowers and Fruit. Monoicous; capsule long, curved, and arc uate, especially when dry, contracted below the mouth. Spring.

Locality. Stones in water.

Fig. 4. Hypnum elodes.

Fine-leaved Marsh Feather Moss (a).

Colour. Brown green.

Stems. Slender, pinnate; branches slender, weak and straggling.

Leaves (b). Minute, distant, lanceolate, acuminate, nerved almost the whole length.

Flowers and Fruit. Dioicous; seta long; capsule large, ovate, cernuous. Spring. Locality. Marshes and bogs.

Fig. 5. Hypnum serpens.

Creeping Feather Moss (a).

Colour. Yellow green.

Stems. Creeping, pinnate, filiform; plant very small.

Leaves (b). Ovate-lanceolate, acuminate, slightly serrate, nerved almost the whole length; but variable, as in many species.

Flowers and Fruit. Monoicous; seta variable; capsule large, cylindrical, long, in dry places short and ovate. Spring.

Locality. Very common in all situations.

Fig. 6. Hypnum radicale.

Long-stalked Creeping Feather Moss (a).

Colour. Emerald green.

Stems. Creeping, branches, irregular, rigid, erect.

Leaves (b). Minute, spreading, cordate-ovate, acuminate; nerve ceasing near the apex.

Flowers and Fruit. Monoicous; seta long, capsule large, long, cernuous, arched. Spring.

Locality. Moist ground, among grass.

FIG. 7. HYPNUM RIPARIUM.

Short-beaked Water Feather Moss (a).

Colour. Grass green.

Stems. Procumbent, pinnate.

Leaves (b). Large, spreading on each side, ovate-lanceolate, not serrated, nerved more than half-way.

Flowers and Fruit. Monoicous; seta long, capsule large, cernuous, oblong.

Locality. Stones and trunks of trees, in places which are sometimes overflowed.

(a). Leaves acute, nerve short or none.

FIG. 8. HYPNUM POLYGAMUM.

Cluster-flowered Feather Moss (a).

Colour. Yellow green.

Stems. Procumbent, pinnate, branches short, spreading.

Leaves (b). Ovate-lanceolate, spreading, not serrated (entire), nerved above half-way.

Flowers and Fruit. Polygamous; flowers clustered; seta long; capsule oblong, sub-cernuous. Summer.

Locality. Wet places and swamps.

Fig. 9. Hypnum stellatum.

Yellow Starry Feather Moss (a).

Colour. Yellow green.

Stems. Erect, tufted, branched irregularly.

Leaves (b). Large, squarrose, recurved, horn-shaped (cuspidate) at the ends of the branches, deltoid-ovate, points very long, nerve none.

Flowers and Fruit. Dioicous; seta very long, capsule arcuate, oblong, cernuous. Summer.

Locality. Bogs and marshes.

Fig. 10. Hypnum chrysophyllum.

Golden Feather Moss (a).

Colour. Golden green.

Stems. Creeping, pinnate; plants small.

Leaves (b.). Cordate-ovate, spreading, acuminate, entire, points recurved.

Flowers and Fruit. Dioicous; seta long; capsule cylindrical, cernuous, sub-erect.

Rare. May.

Locality. Fallow ground.

Fig. 11. Hypnum polymorphum.

Dwarf Starry Feather Moss (a).

Colour. Emerald green.

Stems. Procumbent, filiform, hardly pinnate, very minute.

Leaves (b). Very small, ovate-lanceolate, acuminate, entire, spreading.

Flowers and Fruit. Monoicous; seta long, capsule large in proportion, oblong, curved, cernuous, not horizontal. Summer.

Locality. Walls &c., on limestone.

FIG. 12. HYPNUM HALLERI.

Haller's Feather Moss (a).

Colour. Dark green.

Stems. Creeping, pinnate; plants small.

Leaves (b). Crowded, spreading, ovate-acuminate, serrate, base faintly two-nerved.

Flowers and Fruit. Dioicous (?) capsule oblong, curved, cernuous. Not found in Britain.

Locality. Alpine rocks. Rare. Ben Lawers, &c. Scotland.

Fig. 13. Hypnum dimorphum.

Hair-like Feather Moss (a).

Colour. Yellow green.

Stems. Procumbent, pinnate, branches distant, extremely slender.

Leaves. Of two forms (dimorphous). Stem leaves (b) recurved, ovate-acuminate; branch leaves roundish ovate, obtuse; all faintly denticulate and two-nerved at the base.

Flowers and Fruit. Dioicous; capsule oblong, cernuous. Not found in Britain. Summer.

Locality. Alpine rocks. Very rare. Ben Lawers, not far from the summit.

Fig. 14. Hypnum Heteropterum.

Wry-leaved Feather Moss (a).

Colour. Yellow green.

Stems. Procumbent, pinnate, much thicker than the branches, which are curved and slender.

Leaves (b). Imbricated obliquely, secund, ovate-acuminate, serrated, base two-nerved.

Flowers and Fruit. Dioicous; capsule elliptic, cernuous, horizontal. Rare. Winter.

Locality. Moist rocks, near waterfalls.



PLATE XXXV.

HYPNEÆ (continued).

(b). Leaves roundish, obtuse, entire.

Fig. 1. Hypnum palustre.

Water Feather Moss (a).

Colour. Yellow green.

Stems. Creeping, branched, branches irregular, curved (cuspidate) at the extremities.

Leaves (b). Secund, elliptical, concave, nerve reaching more than half-way, those of the perichetium striated, erect.

Flowers and Fruit. Monoicous; capsule ovate, cernuous, not horizontal, lid conical. Summer.

Locality. Stones in rivulets.

Fig. 2. Hypnum molle.

Soft Feather Moss (a).

Colour. Yellow green.

Stems. Procumbent, creeping, branched; branches short, obtuse.

Leaves (b). Concave, elliptic, acuminate, entire, scale-like, flabby in texture, two-nerved.

Flowers and Fruit. Monoicous (?) capsule ovate, seta curved. Summer (?) Locality. Rocks and stones in rivulets. Not common.

Fig. 3. Hypnum dílitatum.

Broad-leaved Feather Moss (a).

Colour. Brown green.

Stems. Slender, branched, branches straight, simple.

Leaves (b). Broadly ovate, suddenly acuminate, point obtuse, serrated, nerved half-way.

Flowers and Fruit. Monoicous (?) capsule broad, sub-erect. Summer (?) Locality. Near Aber, North Wales. Mr. Wilson's MS.

Fig. 4. Hypnum Eugyrium.

Bundled Feather Moss (a).

Colour. Yellow green.

Stems. Creeping, branched, branches in bunches.

Leaves (b). Ovate-apiculate, obtuse, nerved, entire, smaller below.

Flowers and Fruit. Monoicous (?) capsule cernuous, ovate, seta short.

Locality. Rocks and stones.

Fig. 5. Hypnum articum.

Arctic Feather Moss (a).

Colour. Yellow green.

Stems. Creeping, branched, branches long, simple, not pinnate, obtuse.

Leaves (b). Roundish, entire, two-nerved; the two nerves sometimes running together.

Flowers and Fruit. Monoicous (?) capsule ovate, cernuous. Summer.

Locality. Alpine rivulets.

Fig. 6. Hypnum Trifarium.

Three-ranked Feather Moss (a).

Colour. Brown, tipped with green.

Stems. Erect or procumbent, very long; branches few, short.

Leaves (b). Mostly three-ranked, set like braid, entire, concave, roundish obtuse; nerve nearly the whole length.

Flowers and Fruit. Dioicous (?) Ovate-oblong, cernuous. Not found in Britain.

Locality. Alpine bogs and hills. Not common.

FIG. 7. HYPNUM STRAMINEUM.

Straw-like Feather Moss (a).

Colour. Shining yellow.

Stems. Erect, very long; branches few, erect.

Leaves (b). Imbricated, erecto-patent, elliptical, obtuse, nerved, entire.

Flowers and Fruit. Dioicous. Seta two to three inches long. Capsule large, ovate, cernuous.

Locality. Marshes, with Sphagnum.









Fig. 8. Hypnum sarmentosum.

Twiggy Feather Moss (a).

Colour. Brown or purple.

Stems. Prostrate, long, pinnate; branches short and cuspidate.

Leaves (b). Elliptic-oblong, blunt, concave, nerved almost to the apex; base transparent.

Flowers and Fruit. Dioicous (?) capsule only found in Norway.

Locality. Wet Alpine rocks, in Scotland and Wales.

Fig. 9. Hypnum Giganticum.

Gigantic Feather Moss (a).

Colour. Dark Green.

Stems. Very long, regularly pinnate, ends of branches slightly curved.

Leaves (b). Oblong-lanceolate, entire, nerved, imbricated.

Flowers and Fruit. Dioicous (?) fertile, branches much smaller; seta two to three inches long; capsule ovate, cernuous, lid conical.

Locality. Bogs. Mr. Wilson's MS.

The etching is from a specimen of this magnificent moss, kindly sent the writer by the late Mr. John Nowell. It is impossible to mistake the species, which in colour and habit resembles a miniature spruce-fir.

Fig. 10. Hypnum cordifolium.

Heart-leaved Feather Moss (a).

Colour. Greenish yellow.

Stems. Very long, erect, pinnate; branches spreading, attenuated.

Leaves (b). Heart-shaped, loosely imbricated, large, spreading, obtuse, entire; areolæ large; nerved almost to the apex.

Flowers and Fruit. Monoicous, seta two to three inches long; capsule oblong, lid conical. Summer.

Locality. Wet places.

- B. Stem pinnate, erect, fruitstalks from the upper part of the stem; dioicous.
 - 1. Leaves nerveless, or two-nerved at the base, entire.

Fig. 11. Hypnum cuspidatum.

Pointed Feather Moss (a).

Colour. Yellow green.

Stems. Erect, pinnate, branches cuspidate.

Leaves (b). At first pressed to the stem, afterwards spreading, ovate-obtuse, nerveless, or two-nerved at the base, margin of the upper part incurved.

Capsule. Very large and much curved, lid conical, base tapering, seta two to three inches long. Summer.

Locality. Marshes. Common.

Fig. 12. Hypnum Schreberi.

Red-stemmed Feather Moss (a).

Colour. Stems red, leaves grass green.

Stems. Erect, pinnate, branches slender, curved or drooping.

Leaves (b). Ovate, obtuse, concave, entire, imbricated, margin at the base recurved, very faintly two-nerved at the base.

Capsule. Ovate, cernuous, lid conical, seta very long. Autumn.

Loocality. Banks, &c. Common.

Fig. 13. Hypnum Purum.

Neat Moss. Comb Moss (a).

Colour. Grass green.

Stems. Erect, pinnate, branches round, slightly curved.

Leaves (b). Imbricated, oval, pointed, points recurved, concave, entire, nerved half-way.

Capsule. Small, cernuous, bent suddenly from the seta; rare. Autumn.

Locality. Banks and hedges. Very common and easily recognized.

PLATE XXXVI.

HYPNEÆ (continued).

- C. Stem pinnate, or bi-pinnate, erect, with branched fibres (villi) among the leaves; fructification from the upper part of the stem.
 - 1. Stem simply pinnate.

Fig. 1. Hypnum abietinum.

Pine-tree Feather Moss (a).

Colour. Yellow green.

Stems. Erect, rigid, thickly covered with villi, branches attenuated.

Leaves (b). Imbricated, erecto-patent, ovate-acuminate, plicate, serrate, covered with glands (papillose), nerved almost to the apex.

Flowers and Fruit. Dioicous; capsule cylindrical, cernuous; not found in Britain, and extremely rare.

Locality. Rocks, &c., and near the sea.

Fig. 2. Hypnum Blandovii.

Blandow's Feather Moss (a).

Colour. Yellow green.

Stems. Erect, thick, covered with villi, branches slender, regular, numerous.

Leaves (b). Broadly ovate, acute, keeled, serrulate, margin recurved, nerve almost to the apex.

Flowers and Fruit. Monoicous; seta long; capsules numerous, oblong, curved; May.

Locality. Bogs. Rare.

- 2. Stems doubly or triply pinnate.
- (a). Leaves papillose nerved almost to the apex.

Fig. 3. Hypnum delicatulum.

Delicate Feather Moss (a).

Colour. Yellow green.

Stems. Erect or procumbent, bi-pinnate, branches attenuated, drooping.

Leaves (b). Minute, cordate-acuminate, papillose at the back, keeled, apex serrated, nerved almost the whole length.

Flowers and Fruit. Dioicous. Seta long, capsule cylindrical, long, curved, cernuous. Summer.

Locality. Limestone rocks and chalk hills.

Fig. 4. Hypnum tamariscinum.

Tamarisk-leaved Feather Moss (a).

Colour. Grass green.

Stems. Creeping, in thick mats, arched, tri-pinnate, proliferous, bare of branches in the lower part, feather-like.

Leaves. (b). Papillose, those of the stem cordate-acuminate, of the branches ovate obtuse; nerve reaching almost to the apex.

Flowers and Fruit. Dioicous, capsule brown, shining, cylindrical, curved, beak long. Winter.

Locality. Very common on banks.

(b) Leaves smooth, base two-nerved.

Fig. 5. Hypnum splendens.

Glittering Feather Moss (a).

Colour. Stems red, leaves shining yellow green.

Stems. Matted, tri-pinnate, proliferous.

Leaves (b). Ovate, stem-leaves acuminate, concave, serrated, margin recurved below.

Flowers and Fruit. Dioicous. Seta long, capsule ovate, cernuous; rare. Spring. Locality. Common on banks and hedges, especially in sub-alpine districts.









3. Stems irregularly pinnate, leaves serrated, two-nerved or singly, striated; capsule short, roundish, lid short; Dioicous.

Fig. 6. Hypnum Umbratum.

Shady Rock Feather Moss (a).

Colour. Yellow green.

Stems. Long, arched, bi-pinnate, with innovations.

Leaves (b). Loosely imbricated, cordate-acuminate, strongly serrate, two-nerved, but not strongly.

Capsule. Large, cernuous, lid conical. Winter.

Locality. Among stones in Alpine woods.

Fig. 7. HYPNUM OAKESII.

Mr. Oakes' Feather Moss (a).

Colour. Brownish.

Stems. Arched, irregularly pinnate, branches short and few.

Leaves (b). Imbricated, nearly erect, roundish ovate, acuminate, strongly serrated, two-nerved at the base, or with one reaching half-way, margin recurved.

Capsule. Roundish ovate, cernuous; not found in Britain.

Locality. Near the summit of Ben Lawers.

Fig. 8. Hypnum brevirostre.

Short-beaked Water Feather Moss (a).

Colour. Grass green.

Stems. Erect, irregularly bi-pinnate.

Leaves (b). On the stem spreading, squarrose, cordate; on the branches ovate-acuminate; all two-nerved and serrated.

Capsule. Lid conical, beak bent down, inclined. Winter.

Locality. Mountainous woods.

D.—Stems pinnate, without villi, erect, leaves squarrose, serrated, striated, base two-nerved, capsule short; dioicous.

Fig. 9. Hypnum flagellare.

Thong-branched Feather Moss (a).

Colour. Emerald green.

Stems. Arched, pinnate; branched, recurved, fasciculate.

Leaves (b). On the stem squarrose, cordate; on the branches spreading; roundish-ovate, acuminate, concave; all serrated and two-nerved.

Capsule. Large, ovate, cernuous; lid conical; rare. November.

Locality. Shady rocks, by water.

Fig. 10. Hypnum triquetrum.

Triangular-leaved Feather Moss (a).

Colour. Yellow green, stems red.

Stems. Erect, three to six inches in height, very rigid, in the upper part standing distinct from one another, as fir-trees in a wood; branches recurved, attenuated.

Leaves (b). Cordate or triangular, concave, serrated, base two-nerved; on the stem squarrose; on the branches, spreading.

Capsule. Short, roundish, lid conical, seta long. Winter and spring.

Locality. Hedges and woods. Fruit rare; not uncommon in Cornwall.

This is one of the best known of mosses, being at the present time much collected; and, we are sorry to add, dyed a variety of colours, for decorative purposes.

Fig. 11. Hypnum loreum.

Rambling Mountain Feather Moss (a).

Colour. Grass green.

Stems. Sub-erect, not rigid, irregularly branched, the stems and branches in a mass, "rambling" and curved in all directions.

Leaves (b). Squarrose, points recurved, ovate-lanceolate, acuminate, serrated.

Capsule. Short, roundish, seta long, remarkably twisted when dry; rare. Winter.

Locality. Mountainous woods. Abundant in fructification in the "Cascade Wood," Trebartha Hall, Cornwall.

Fig. 12. Hypnum squarrosum.

Drooping-leaved Feather Moss (a).

Colour. Stems red, leaves yellow green.

Stems. Erect, slender, pinnate, branches irregular, drooping, attenuated.

Leaves. Ovate-acuminate, points drooping, squarrose, serrated, base faintly two-nerved.

Capsule. Roundish ovate, lid conical; rare. Winter.

Locality. Hedges, &c. Fruit not uncommon in East Cornwall.



PLATE XXXVII.

HYPNEÆ (continued).

D. Leaves secund.

1. Stems, pinnate, erect, fructification near the middle, leaves falcate.

FIG. 1. HYPNUM FLUITANS.

Floating Feather Moss (a).

Colour. Yellow green.

Stems. Very long, slender, erect, or floating, branches short and very distant.

Leaves (b). Set loosely, falcato-secund, lanceolate, acuminate, apex serrated, nerved more than half-way.

Flowers and Fruit. Monoicous; seta four or five inches long; capsule curved, oblong. Spring.

Locality. Marshes and pools.

Its peculiar ragged, straw-like habit is easily recognizable.

Fig. 2. Hypnum stenophyllum.

Twisted-leaved Feather Moss (a).

Colour. Yellow green.

Stems. Long, branched, branches short, irregular.

Leaves (b). Lanceolate, very much curved and twisted, with long points; nerve long.

Flowers and Fruit. Dioicous (?). Barren in Britain.

Locality. Marshes. Mr. Wilson's MS.

Fig. 3. Hypnum revolvens.

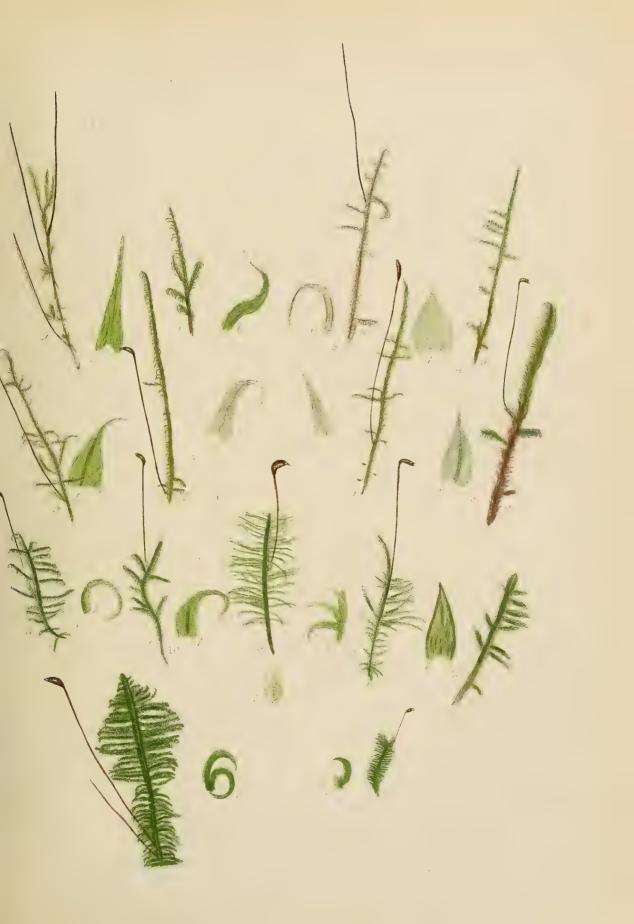
Rusty Claw-leaved Feather Moss (a).

Colour. Yellow.

Stems. Not rigid, erect or procumbent, pinnate, branches few, curved.









Leaves (b). Ovate-lanceolate, bent almost round (circinnate), secund, very concave, apex serrulate, nerved more than half-way.

Flowers and Fruit. Monoicous; seta very long, capsule oblong, cernuous; rare. Summer.

Locality. Bogs and marshes.

Fig. 4. Hypnum vernicosum.

Slender Green Feather Moss (a).

Colour. Emerald green.

Stems. Long, slender, irregularly pinnate, branches short.

Leaves (b). Ovate, entire, nerveless, secund, areolæ large.

Flowers and Fruit. Barren in Britain.

Locality (?). Mr. Wilson's MS.

Fig. 5. Hypnum exannulatum.

Cusp-leaved Feather Moss (a).

Colour. Yellow green.

Stems. Long, pinnate, branches cusped at the ends.

Leaves (b). Ovate-lanceolate, with long cusped points, entire; nerve strong, nearly to the apex.

Flowers and Fruit. Monoicous (?); capsule cernuous, ovate, seta two inches long. Locality. Wet places (?) Mr. Wilson's MS.

Fig. 6. Hypnum Wilsonii.

Mr. Wilson's Feather Moss (a).

Colour. Yellow green.

Stems. Long, pinnate, branches very few, short, drooping at the ends.

Leaves (b). Oblong-lanceolate, scattered, with long cusped points, nerve reaching more than half-way.

Flowers and Fruit. Dioicous (?); capsule large, ovate, cernuous, lid conical. Summer.

Locality (?). Mr. Wilson's MS.

FIG. 7. HYPNUM KNEIFFII.

Kneiff's Feather Moss (a).

Colour. Yellow green.

Stems. Erect, pinnate, branches short, few, attenuated, curved at the ends.

Leaves (b). Cordate-acuminate, points not very long, distant, nerved more than half-way.

Flowers and Fruit. Dioicous; seta two inches long; capsule curved, nearly erect, apophysis long. Summer.

Locality. Swamps.

Fig. 8. Hypnum Lycopodoides.

Claw-leaved Bog Moss (a).

Colour. Brown and green.

Stems. Erect, pinnate, branches curved.

Leaves (b). Very large, falcate, secund, concave, entire, nerved almost to the summit.

Flowers and Fruit. Dioicous; seta two inches long, capsule oblong, cernuous. Very rare.

Locality. Bogs and marshes.

The species in the above group of mosses are difficult to determine. Some were formerly united under the name of *H. Aduncum*, and probably may yet be ascertained to be only varieties. Between *H. Fluitans* and *H. Lycopodoides* there is indeed a wide difference, but some of the intermediate forms appear to pass into one another. Perhaps the next few years will give us an entire rearrangement of the whole order of mosses.

2. Leaves serrulate, nerved more than half-way.

FIG. 9. HYPNUM UNCINATUM.

Sickle-leaved Feather Moss (a).

Colour. Yellow green.

Stems. Erect or procumbent, pinnate, branches longer, cusped at the ends.

Leaves (b). Much crowded, circinnate, secund, subulate, base broad and sheathing.

Flowers and Fruit. Monoicous. Capsule oblong, cernuous, lid conical. June.

Locality. Walls and rocks.

Fig. 10. Hypnum falcatum.

Sickle-leaved Feather Moss (a).

Colour. Yellow green.

Stems. Pinnate, slender, branches irregular.

Leaves. Sickle-shaped, turned every way, base sheathing, points bent to the back of the branch, serrated.

Flowers and Fruit. Monoicous (?); seta long, capsule curved, oblong. Summer. Locality. Walls and rocks, sometimes on the ground.

Fig. 11. Hypnum commutatum,

Curled Fern Feather Moss (a).

Colour. Yellow green.

Stems. Procumbent, thick with radicles, pinnate, branches very slender, ends cusped.

Leaves (b). Circinnate, secund, twisted when dry, lanceolate, striated.

Flowers and Fruit. Dioicous. Capsule very large, oblong, cernuous. Spring. Locality. Wet places.

Fig. 12. Hypnum filicinum.

Lesser Golden Fern Feather Moss (a).

Colour. Yellow green.

Stems. Pinnate, branches slender, stem with radicles.

Leaves (b). Falcate, secund, ovate lanceolate.

Flowers and Fruit. Dioicous; seta long, capsule narrow, cernuous. Spring.

Locality. Wet places, chiefly in limestone.

Fig. 13. Hypnum Rugosum.

Wrinkle-leaved Feather Moss (a).

Colour. Brownish green.

Stems. Procumbent, tufted, fertile regularly, barren irregularly, pinnate; branches, short, attenuated, recurved.

Leaves (b). Ovate-lanceolate, falcate, secund, wrinkled and folded; margin recurved, nerved half-way.

Flowers and Fruit. Dioicous; capsule not found in Britain.

Locality. Rocks and heaths in various parts.

3. Leaves striated, nerveless or two-nerved, serrulate.

Fig. 14. Hypnum crista-castrensis.

Ostrich Plume Feather Moss (a).

Colour. Yellow green.

Stems. Almost erect, pinnated regularly, branches crowded, slightly recurved.

Leaves (b). Circinnate, secund, ovate on the stem, lanceolate on the branches, all acuminate and margins recurved, serrate at the apex, cusped at the ends of the branches.

Flowers and Fruit. Dioicous. Seta long, capsule large, oblong, cernuous; lid pointed.

Locality. Alpine woods in the north of England.

A very distinct species, the most regularly pinnate of any.

Fig. 15. Hypnum molluscum.

Plumy-crested Feather Moss (a).

Colour. Grass green.

Stems. Regularly pinnate, branches crowded.

Leaves. Circinnate, secund, on the stem cordate, on the branches lanceolate, all acuminate and serrated, base two-nerved.

Flowers and Fruit. Dioicous; seta slender; capsule ovate, horizontal, lid sharply pointed. Winter.

A miniature resemblance of the last species.

PLATE XXXVIII.

HYPNEÆ (continued).

4. Stems procumbent, pinnate, fructification near the base, leaves falcate, secund.

Fig. 1. Hypnum hamulosum.

Hook-leaved Feather Moss (a).

Colour. Yellow green.

Stems. Procumbent, pinnate, branches very slender, with the extremities hooked.

Leaves (b). Ovate-lanceolate, circinnate-acuminate, nerveless, hooked at the ends of the branches.

Flowers and Fruit. Monoicous, with detached barren flowers among the leaves (nidulant). Capsule arched, cylindrical. Summer.

Locality. Alpine situations.

Fig. 2. Hypnum cupressiforme.

Cypress-leaved Feather Moss (a).

Colour. Grass green.

Stems. Procumbent, branches few, flat.

Leaves (b). Falcate, secund, lanceolate-acuminate, sub-serrated, base two-nerved or nerveless.

Flowers and Fruit. Dioicous; capsule cylindrical, curved, lid conical. Winter. Locality. Walls, &c. Common.

A very variable species, but always with strongly falcate leaves.

Fig. 3. Hypnum resupinatum.

Upward-turned Feather Moss (a).

Colour. Yellow green.

Stems. Creeping, pinnate.

Leaves (b). Ovate-lanceolate, acuminate, nerveless, pointing upwards.

Flowers and Fruit. Dioicous. Capsule erect, scarcely curved, oblong, lid oblique. Winter.

Locality. Walls, trunks of trees, &c., &c.

Fig. 4. Hypnum pratense.

Meadow Feather Moss (a).

Colour. Grass green.

Stems. Erect, branched; branches flat.

Leaves. Secund, spreading flat on each side of the stem, (complanate) ovatelanceolate, nerveless.

Flowers and Fruit. Dioicous. Capsule narrow, ovate, cernuous, base tapering; not found in Britain.

Locality. Moist banks, &c.

Fig. 5. Hypnum ochraceum.

Yellow Mountain-rill Feather Moss (a).

Colour. Brownish.

Stems. Erect, branched, branches few, flaccid.

Leaves (b). Ovate-lanceolate, concave, nerve forked.

Flowers and Fruit. Dioicous. Seta red, capsule much tapering at the base.

Locality. In wet places among mountains.

5. Leaves roundish, concave, entire.

Fig. 6. Hypnum scorpioides.

Scorpion Feather Moss (a).

Colour. Brownish.

Stems. Long, branched irregularly; branches simple.

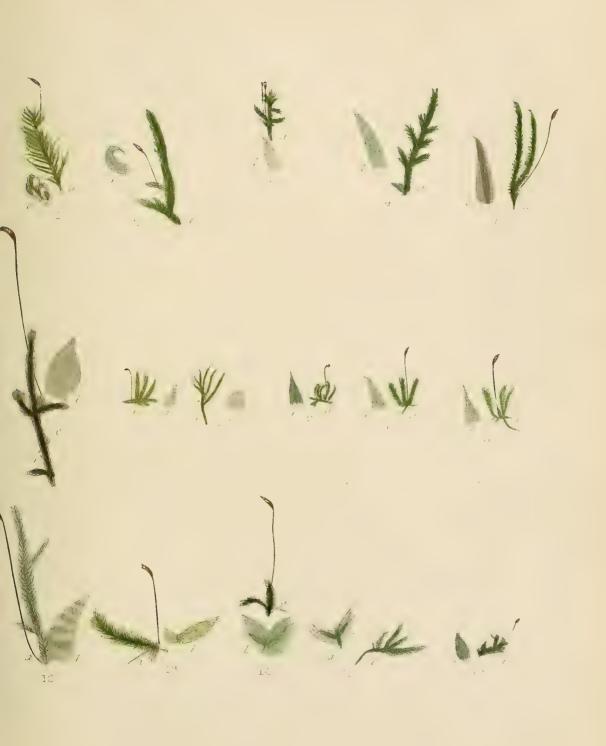
Leaves. Crowded, falcate, secund, apiculate, large, making stem and branches appear very broad and flat, nerveless or faintly two-nerved.

Flowers and Fruit. Dioicous. Seta very long, capsule large, curved, cernuous, lid conical, pointed.

Locality. Bogs. Fruit rare.









6. Stems prostrate, branches few and irregular; leaves slightly secund; nerve variable.

Fig. 7. H YPNUM DEMISSUM.

Prostrate Rock Feather Moss (a).

Colour. Yellow green.

Stems. Prostrate, filiform, branches short, obtuse.

Leaves (b). Small, erecto-patent, lanceolate, nerveless, margin reflexed.

Flowers and Fruit. Monoicous. Capsule minute, elliptical, lid rostrate.

Locality. On rocks.

Fig. 8. Hypnum micans.

Sparkling Feather Moss (a).

Colour. Yellow green, shining and glossy.

Stems. Very slender, branches slender, simple.

Leaves. Round, apiculate, concave, serrate, base two-nerved.

Flowers and Fruit. Dioicous. Only found with fertile flowers.

Locality. Rocks, &c.

The capsule of this moss being at present unknown, its true place has yet to be ascertained.

7. Leaves turned upwards, secund; stems creeping or nearly erect.

Fig. 9. Hypnum incurvatum.

Incurved Feather Moss (a).

Colour. Brown or dark green.

Stems. Creeping, pinnate, branches incurved.

Leaves (b). Imbricated, secund, turned up (assurgent), ovate-acuminate, entire, base two-nerved.

Flowers and Fruit. Monoicous; seta red; capsule minute, brown, ovate, lid short.

Fig. 10. Hypnum pulchellum.

Neat Mountain Feather Moss (a).

Colour. Grass green.

Stems. Short, branches erect, rather flat.

Leaves (b). Assurgent, secund, lanceolate, tapering to a point, nerveless, not serrated.

Flowers and Fruit. Monoicous; capsule oblong, cernuous, lid apiculate. Summer. Locality. Shady rocks.

FIG. 11. HYPNUM MÜHLENBECKII.

Mühlenbeck's Feather Moss (a).

Colour. Grass green, glossy.

Stems. Erect, tufted, branches fasciculate.

Leaves (b). Deltoid, acuminate, serrated, nerveless or two-nerved; spreading, secund.

Flowers and Fruit. Monoicous; capsule oblong, base tapering, when dry striated.

Locality. Alpine rocks.

Hypnum Silesiacum, Silesian Feather Moss, stems procumbent, branches few, leaves assurgent, with points turned down; has been very rarely found in Britain.

E. Leaves complanate, stems procumbent.

Fig. 12. Hypnum undulatum.

Waved Feather Moss (a).

Colour. Whitish or pale green.

Stems. Procumbent, branches few.

Leaves (b). Ovate, much waved, entire, base faintly two-nerved.

Flowers and Fruit. Dioicous (?); seta very long and slender; capsule curved and furrowed when dry, narrow, lid half as long, beak short. Winter.

FIG 13. HYPNUM SYLVATICUM.

Wood Feather Moss (a).

Colour. Yellow green.

Stems. Branches very few.

Leaves (b). Ovate, narrow, entire, two-nerved, not waved.

Flowers and Fruit. Dioicous; capsule sub-cylindrical, lid short; beaked.

Autumn.

Locality. Woods, at the roots of trees.

Fig. 14. Hypnum denticulatum.

Sharp Flat-leaved Feather Moss (a).

Colour. Grass green.

Stems. Prostrate, branches very few.

Leaves (b). Set obliquely, ovate-acuminate, base two-nerved, margin reflexed.

Flowers and Fruit. Monoicous; seta long, red; capsule long, narrow, red Summer.

Locality. Woods and hedges.

Fig. 15. Hypnum elegans.

Elegant Feather Moss (a).

Colour. Light green, keeping its colour when dry.

Stems. Branched; branches complanate, quite prostrate.

Leaves (b). Oblique, ovate-lanceolate, complanate, points slender, slightly serrated.

Flowers and Fruit. Dioicous; capsule ovate, pendulous; very rare.

Locality. Shady banks.

Fig. 16. Hypnum depressum.

Depressed Feather Moss (a).

Colour. Dark green.

Stems. Prostrate, pinnate; branches wide in the middle.

Leaves (b). Ovate, concave, serrated, two-nerved at the base.

Flowers and Fruit. Dioicous; capsule minute, oval, cernuous, lid as long as the capsule.

Locality. Rocks and stones.



PLATE XXXIX.

OMALIEÆ, ETC.

Fig. 1. Characteristics of Order.

Stems pinnate, capsule (a) erect; peristome double; leaves (b) complanate, elliptic.

Fig. 1. Omalia trichomanoides.

Blunt Fern Feather Moss (c).

Colour. Grass green.

Stems. Irregularly pinnate, very flat.

Leaves (b). Complanate, oval, oblong, obtuse, serrulate, nerved faintly half-way.

Flowers and Fruit. Monoicous; capsule on long seta, lid with oblique beak.
Winter.

Locality. Trees and rocks.

NECKERA.

Fig. 2. Generic Character.

Capsule erect, either immersed or on short seta. Peristome (a) double, outer teeth subulate, long, bent (geniculate) at the base, marked with a line; the inner of short alternating ciliary processes; lid with oblique beak. Leaves complanate, areolæ (b) small.

Fig. 3. Neckera complanata.

Flat-leaved Neckera (a).

Colour. Yellow green.

Stems. Pinnate, branches crowded, attenuated.

Leaves (b). Oblong, apiculate, not waved, base faintly two-nerved.

Flowers and Fruit. Dioicous; capsule erect, elliptical, on long seta. Winter.

Locality. Trunks of trees.

Fig. 4. Neckera crispa.

Crisped Neckera (a).

Colour. Brownish green.

Stems. Pinnate, many inches long; growing horizontally.

Leaves (b). Much waved, ovate-oblong, apiculate, faintly nerved.

Flowers and Fruit. Dioicous; seta long, capsule ovate, large. Winter.

Locality. Rocks and trunks of trees in mountainous districts.

Fig. 5. Neckera Philippeana.

Bright Green Neckera (a).

Colour. Bright green.

Stems. Pinnate, branched much on one side.

Leaves (b). Waved, ovate-apiculate, serrulate above, faintly nerved, point long.

Flowers and Fruit. Dioicous; capsule immersed.

Locality. Trunks of trees: Very rare.

Fig. 6. Neckera pumilia.

Dwarf Neckera (a).

Colour. Grey green.

Stems. Pinnate, branches short.

Leaves (b). Ovate-apiculate, waved, serrated, margin recurved, base two-nerved.

Flowers and Fruit. Dioicous; seta very short, capsule elliptical.

Locality. Trunks of trees.

Fig. 7. Neckera Pennata.

Feathered Neckera (a).

Colour. Yellow green.

Stems. Pinnate, branches short.

Leaves (b). Ovate-acuminate, more curved on the upper than on the lower side, entire, nerveless.

Flowers and Fruit. Monoicous; capsule immersed.

Locality. Trunks of trees. Very rare.









HOOKERIEÆ.

Fig. 8. Characteristics of Order.

Stems procumbent, or nearly erect, branched, complanate. Capsule (a) elliptical or ovate, horizontal, succulent, seta succulent, lid rostrate, calyptra mitriform. Peristome much like *Hypnum*, but the outer teeth in some species marked with two red ridges. Areolæ (b) very large. The whole plant extremely succulent, growing in wet places.

HOOKERIA.

Fig. 9. Hookeria lucens.

Shining Hookeria (a).

Colour. Whitish green.

Stems. Procumbent, branched, complanate.

Leaves (b). Roundish ovate, entire, nerveless, are olæ very beautiful and regular.

Flowers and Fruit. Monoicous; capsule black and shining, seta and calyptra white. Spring.

Locality. Damp shady places.

Fig. 10. Hookeria læte-virens.

Deep Green Hookeria (a).

Colour. Dark green.

Stems. Branched, complanate.

Leaves. Complanate, with a border, oval, acuminate, apex serrated, two-nerved. areolæ smaller than in H. lucens.

Flowers and Fruit. Monoicous; capsule small, beak long. Winter.

Locality. Shady places; not common.

DALTONIA.

Fig. 11. Daltonia splachnoides.

Irish Daltonia (a).

Colour. Dark green.

Stems. Erect, tufted, branches fastigiate.

- Leaves (b). Spreading on all sides, crowded, erecto-patent, lanceolate, acuminate, almost hair-pointed, nerve ceasing below the apex.
- Flowers and Fruit. Synoicous; capsule nearly erect, not symmetrical, apophysis short, lid long. Winter.

Locality. Moist rocks and on trees in sub-alpine districts.

CRYPTOTHECEÆ.

Fig. 12. Characteristics of Order.

Stems from a creeping rhizoma, pinnate, capsule immersed, oval oblong, lid beaked, calyptra (c) conico-mitriform. Peristome double, outer teeth forming a cone when moist.

CRYPHÆA HETEROMALLA.

Lateral Cryphæa (a).

Colour. Yellow green.

Stems. Procumbent, branched.

- Leaves (b). Spreading, imbricated, ovate, concave, nerved more than half-way, margin recurved.
- Flowers and Fruit. Monoicous; capsules many, on the upper side of the branches, oblong, immersed, calyptra brown, rough, covering the capsule. Spring.
- Locality. Trunks of trees. Common. A variety with longer stems found in water.

FONTINALEÆ.

Fig. 13. Characteristics of Order.

Mosses growing in water, stems very long and branched, slender, floating, only rooted at the base, bare of leaves below. Leaves three-ranked, crowded, areolæ narrow. Capsule immersed, ovate or oval, pedicel rooted in the receptacle (vaginula). Calyptra small. Annulus none. Peristome (Fig. 13) large and very curious; bright red, the outer of sixteen teeth, united in pairs at the apex, with prominent bars internally, very long, subulate, hygroscopic, incurved when dry,

spreading when moist, contrary to the usual rule; the inner a cone, sieve-like, with sixteen angles; these being cilia, joined by cross-bars, and beset internally with spurs.

Fig. 14. Fontinalis antipyretica.

Incombustible Moss (a).

Colour. Grey green.

Stems. Very long, branched.

Leaves (b). Three-ranked, ovate-acuminate, large and coarse looking, margin folded in on one side, the same side folded on the same branch.

Flowers and Fruit. Dioicous; capsule oval, brown, numerous, immersed. Summer.

Locality. Common in water, and on wood by river banks.

Fig. 15. Fontinalis Squamosa.

Alpine Water Moss (a).

Colour. Dark green.

Stems. Very much branched, base filiform; branches fasciculate.

Leaves (b). Lanceolate, concave.

Flowers and Fruit. Dioicous; capsule oval, immersed; rare. Summer.

Locality. Mountain streams. Common.

Dichelyma capillaceum, Bristly Water Moss, though included in the "Bryologia Britannica," we have not given here, as it is a doubtful native.

FINIS.



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